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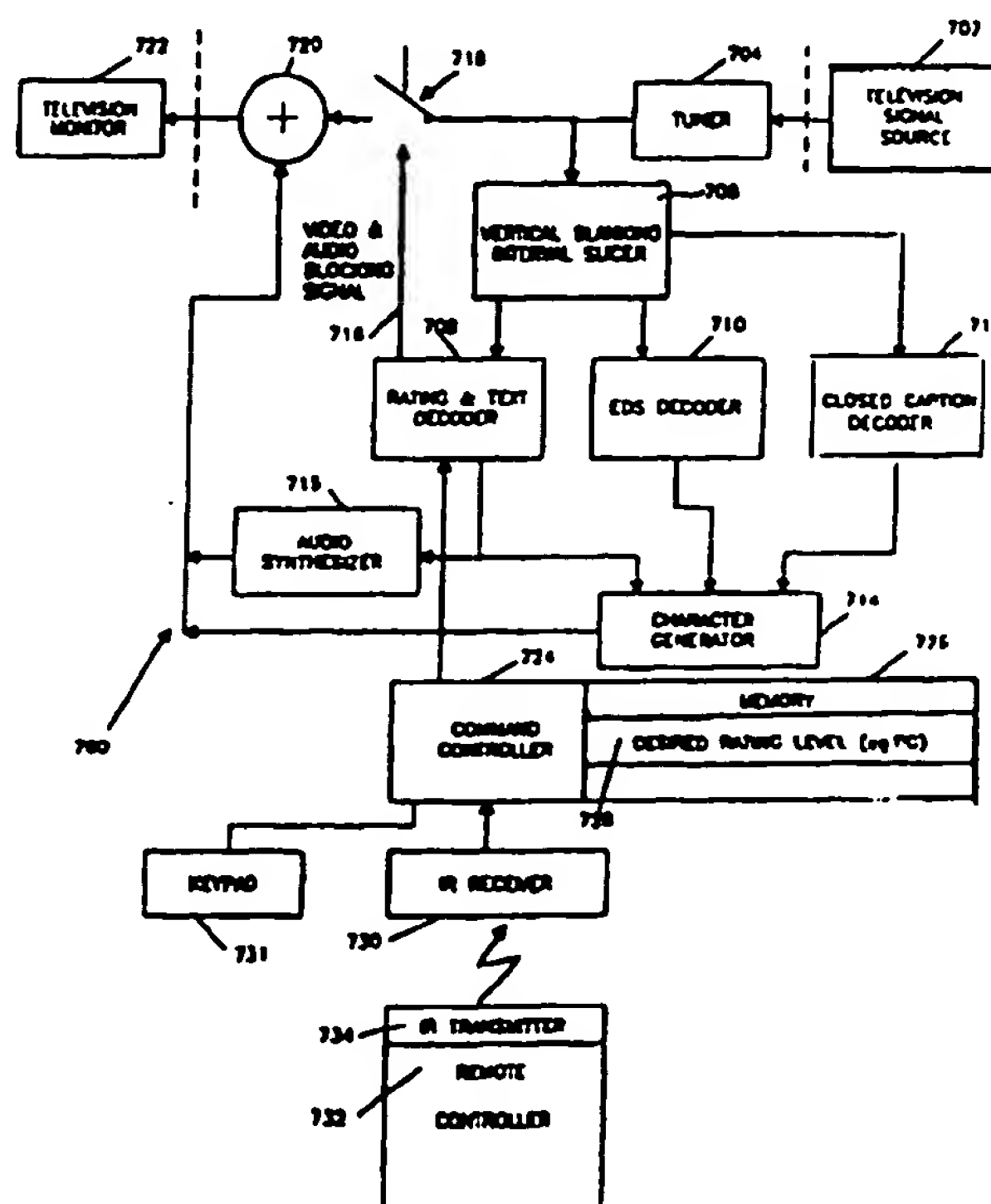
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(54) Title: APPARATUS AND METHOD FOR ALLOWING RATING LEVEL CONTROL OF THE VIEWING OF A PROGRAM

## (57) Abstract

An apparatus (40) is provided for allowing rating level control of the viewing of a program. The apparatus includes a device for entering a desired rating level for controlling the viewing of a program (12), a device for extracting rating data from a program video segment (708), the rating data indicating a rating level of the program video segment, and a device for extracting text data representative of the content of the program video segment from the program video segment (708). The apparatus includes a device for determining whether the extracted rating data indicates that the program video segment has an acceptable rating level for viewing with regard to the entered desired rating level (748) and a device for blocking the playing of the program video segment if it is determined that the extracted rating data indicates that the program video segment has an unacceptable rating level for viewing with regard to the entered desired rating level (748). The apparatus further includes a device for substituting display of the extracted text data representative of the content of the program video segment for the blocked program video segment (714), if it is determined that the extracted rating data indicates that the program video segment has an unacceptable rating level for viewing with regard to the entered desired rating level.



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## APPARATUS AND METHOD FOR ALLOWING RATING LEVEL CONTROL OF THE VIEWING OF A PROGRAM

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### Background of the Invention

#### Field of the Invention:

This invention relates generally to television and particularly to apparatus for providing parental control of television viewing.

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#### Description of the Related Art:

Parental control is presently available in some television receivers, video cassette recorders, and cable boxes on a limited basis. In these devices, certain channels may be locked out. However, the locking out of channels does not prevent children from spending excessive time watching television instead of studying or doing other things. Other devices

15 limit the amount of time, but do not provide for selective viewing to prevent viewing of undesirable programs. One example of parental control at the television receiver is disclosed in U.S. Patent 4,510,623 to Bonneau et al. A local oscillator for electronically tuning the television is controlled by a phase lock loop which is responsive to the output signal from a microprocessor. The microprocessor provides the output signal only if the selected channel

20 has not been inhibited. To inhibit a channel for a period of time, the user enters a lockout code which is stored in a non-volatile memory. The memory provides one input to the microprocessor which is compared to the input by a user selecting a channel to be viewed. The microprocessor determines whether the selected channel is one of the inhibited channels and, if it is, does not generate the necessary signal for tuning to that channel.

25 Another prior art patent that discloses the blocking out of selected channels is U.S. Patent No. 4,718,107 to John J. Hayes. The parental control disclosed in the Hayes patent is provided in a converter box. In this system, if the access code is forgotten, the converter box has to be taken to the business office of the CATV system to have the memory purged of the blocked-out channel information and the access code, and a new access code must be

30 entered. In the Hayes device, only selected channels can be blocked which does not allow the selected blocking of particular programs in a channel.

In general, the present state of the art concerning parental control suffers from a number of drawbacks. In particular, the control is very limited and does not provide a parent the broad control desirable for controlling the viewing or use of a television by a

35 child.

#### Summary of the Invention

It is an object of this invention to provide a television receiver that allows a parent to control the viewing of programs.

1           It is another object of this invention to allow a parent to select a rating level that will  
be displayed on a television to youngsters. For example, the parent can specify a PG  
(parental guidance) rating as a desired rating level. Then any program video segments with  
a rating of PG-13, R, or X will be blocked from viewing; however, PG and G program  
5 video segments will be displayed.

It is another object to substitute the display of text describing what is happening in the  
plot for the blocked program video segment.

In accordance with an embodiment of the invention, an apparatus is provided for  
allowing rating level control of the viewing of a program. The apparatus includes a device  
10 for entering a desired rating level for controlling the viewing of a program, a device for  
extracting rating data from a program video segment, the rating data indicating a rating level  
of the program video segment, and a device for extracting text data representative of the  
content of the program video segment from the program video segment. The apparatus  
includes a device for determining whether the extracted rating data indicates that the program  
15 video segment has an acceptable rating level for viewing with regard to the entered desired  
rating level and a device for blocking playing of the program video segment if it is  
determined that the extracted rating data indicates that the program video segment has an  
unacceptable rating level for viewing with regard to the entered desired rating level. The  
apparatus further includes a device for substituting the display of the extracted text data  
20 representative of the content of the program video segment for the blocked program video  
segment.

Other objects and many of the attendant features of this invention will be more readily  
appreciated as the same becomes better understood by reference to the following detailed  
descriptions and considered in connection with the accompanying drawings in which like  
25 reference symbols designate like parts throughout the figures.

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1     **Brief Description of the Drawings**

          FIG. 1 is a schematic showing apparatus including a parental control device that receives the signal source input and blocks or enables programs and attaches to a cable box according to the present invention. A remote controller is included for controlling the  
5     parental control device;

          FIG. 2 is a schematic showing the details of a parental control device having a programmable multichannel filter according to the present invention;

          FIG. 3 is a schematic showing a programmable multiple channel filter according to the present invention;

10     FIG. 4 is an illustration of a frequency spectrum showing channels being blocked according to the present invention;

          FIG. 5 is a schematic of a processor for implementing the command controller and compressed code decoder according to the present invention;

          FIG. 6 is a flow-chart of the operation of apparatus incorporating the parental control  
15     device in accordance with the present invention;

          FIGs. 7 - 11 illustrate the different displays on the screen of the TV or the display of the VCR or remote controller employing the present invention;

          FIG. 12 is a schematic showing the details of a parental control device having a tunable channel jammer according to the present invention;

20     FIG. 13 is a schematic of a jammer according to the present invention;

          FIG. 14 is an illustration of a frequency spectrum showing channels being jammed according to the present invention;

          FIG. 15 is a schematic showing the details of a parental control device having a tunable channel selector according to the present invention;

25     FIG. 16 is a schematic of a tunable channel selector according to the present invention;

          FIG. 17 is an illustration of the frequency spectrum at various locations in FIG. 16;

          FIG. 18 is a schematic showing a television receiver including a parental control device that receives the signal source input and blocks or enables program according to the  
30     present invention;

          FIG. 19 is a time line showing a video signal in accordance with the present invention having a program video segment including rating data and text data;

          FIG. 20 is another time line of a video signal according to the present invention having multiple video segments including rating data and text data;

35     FIG. 21 is a schematic of an apparatus according to the present invention for providing rating level control of program viewing;

          FIG. 22 is a schematic of the rating and text decoder shown in FIG. 25;

1           FIG. 23 is an illustration of a video tape layout according to the present invention having a video segment including rating data and text data;

          FIG. 24 is another illustration of a video tape layout according to the present invention having a video segment including rating data and text data;

5           FIG. 25 is a schematic of a video cassette recorder according to the present invention that includes apparatus for allowing rating level control of program viewing;

          FIG. 26 is a flow diagram of a method for transmitting and recording a program to allow rating level control of viewing of the program according to the present invention;

10          FIG. 27a and 27b are flow diagrams for a method for allowing rating level control of the viewing of a program according to the present invention; and

          FIG. 28 illustrates the display of text data on a television monitor according to the present invention.

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1 **Detailed Description of the Specific Embodiments**

Referring to the drawings, parental control circuitry 40 is shown in FIG. 1 for providing parental control of the use of a television receiver. The parental control circuitry 40 is directly connected to the signal source input line 39 which is attached to parental control circuitry 40 through the tamper proof connector 50. The signal source input line 39 may be from one of many typical sources such as an antenna, television cable, or a satellite converter box. The signal source input line 39 is locked to the parental control circuitry 40 by the tamper proof connector 50 so that the parental control circuitry 40 may not be easily removed from the system and simply bypassed. The output of the parental control circuitry 40 is sent to cable box 43, which converts channels for use by the VCR 44 and the television monitor 45. The cable 41 between the parental control circuitry 40 and the cable box 43 may also have tamper proof connectors on either end, such as tamper proof connector 52 and tamper proof connector 54. The purpose of the parental control circuitry 40 is to allow parents to either enable selected programs for viewing, or to block selected programs. Locating the parental control circuitry 40 between the signal source input line 39 and the cable box 43 allows the enabling or blocking of programs that are purposely scrambled and intended to be unscrambled by the cable box 43. The parental control circuitry 40 can be commanded via control keys on the parental control circuitry 40 (not shown) or the remote controller 12, which is further described below. To communicate with the remote controller 12, the parental control circuitry 40 has an infrared detector 32. The parental control circuitry 40 also has an infrared emitter 46 which can communicate with infrared detector 48 in the cable box 43. For example, if parental control circuitry 40 is tuned to a particular channel associated with a selected program, then the parental control circuitry 40 can communicate via infrared emitter 46 to switch cable box 43 to the same channel via infrared detector 48. The output of cable box 43 is typically channel 3 or channel 4, and the VCR 44 and the television monitor 45 are typically tuned to the output channel of the cable box 43. FIG. 2 is a specific embodiment of parental control circuitry 40. In this embodiment, signal source input on line 39 is passed through programmable multiple channel filter 60 to form the parental control output on line 41. Programmable multiple channel filter 60 is controlled by command controller 36. The command controller 36 receives commands from infrared detector 32 and outputs commands to cable box 43 via infrared emitter 46. Command controller 36 is coupled to/from the clock 42 and the compressed code decoder 38, which also has an input from the clock 42. The clock 42 in parental control circuitry 40 can be synchronized with a clock in VCR 44 and any other clocks in the parental control system 11 by downloading time encoded as audio tones from telephone 35 to microphone 34 and remote controller 12, which can then send the time to the various clocks in the system to synchronize them. The command controller also receives an input from key switch 33, which has a parental control (PC) position and a normal position. The key for key switch



1 33 should be kept by the parent in a secure place. If the key switch is in the normal position  
then any program can be watched. If the key is in the PC position, then only programs that  
are enabled can be watched. Outputs from command controller 36 may include input  
5 selection switch 57 and vertical blanking interval decoder 437, as shown in FIG. 18, when  
the parental control circuitry is also connected to devices other than the cable loop. For  
example, the parental control circuitry 40 may be located inside the television as shown in  
FIG. 18 or outside the television and somewhere before the input to the television.

The command controller 36 and compressed code decoder 38 can be implemented as  
shown in FIG. 5 and are described in further detail below. However, before the details of  
10 FIG. 5 are described, the programmable multiple channel filter 60 of FIG. 2 and its  
operation are described.

The programmable multiple channel filter 60 can be implemented as shown in FIG.  
3. Suppose a user has specified a number of programs to be blocked from viewing on the  
television 45. The user can specify which programs to block by either specifying particular  
15 programs to be blocked, or by specifying that all programs on a particular channel be  
blocked. FIG. 3 shows a programmable multiple channel filter 60 which can filter multiple  
channels from the broad band television signal input 39. For example, in FIG. 3, switch  
66 is shown as open which indicates that the channel 3 filter 63 will filter channel 3 from the  
parental control output 41. On the other hand, switch 65 and switch 67 are closed allowing  
20 the broad band television signal input 39 to bypass channel 2 filter 62 and channel 4 filter  
64. Thus, channels 2 and 4 are not filtered from the parental control output 41. Switches  
65-71 are controlled by switch interface 61 which is in turn controlled by command  
controller 36. If a particular program is to be blocked from viewing, then the command  
controller 36 opens the appropriate switch, for example, switch 66 for channel 3, at the start  
25 of the program and closes the switch 66 at the end of the program. This would block the  
viewing of that particular program on channel 3. To perform this function, the command  
controller needs to know the channel, date, time-of-day and length (CDTL) of the program  
to be blocked from viewing. This CDTL information can be either input as channel, date,  
time-of-day and length to the parental control circuitry 40 or can be entered via compressed  
30 codes, which are described below, via remote controller 12.

Another method of determining when to block a program is to look for a program  
identifier in the signal received from the television signal source. If the received program  
identifier matches the program identifier of a program to be blocked that has been entered  
in the command controller 36, then the program is blocked. An example of this method is  
35 called VPS, which is a program identification transmitted with the television signal in  
European broadcasting systems. This technique can also be used to enable programs.

FIG. 4 shows an example frequency spectrum for a broad band television signal that  
has been filtered by programmable multiple channel filter 60. In FIG. 4 channels 3, 6, and



1 7 have been filtered so that programs in those channels cannot be viewed. Because it is  
possible with the programmable multiple channel filter 60 to either block the viewing of an  
entire channel or a particular program, the frequency spectrum of the parental control output  
41 will change over time as the command controller 36 sends commands for turning on and  
5 off the switches 65-71 to the switch interface 61.

The remote controller 12, shown in FIG. 1 has a number of keys, which include  
numerical keys 20, compressed code switch 22, function keys 24, program key 26, and  
power key 27. The remote controller 12 also includes a total parental control key 29 and an  
enter key 31. The remote controller may further advantageously include a cursor control  
10 having up/down keys 17 and 21, respectively, right/left keys 19 and 23, respectively, and  
an activate key 25. There are means in the remote controller 12 that interpret each key as  
it is pressed, and sends the proper command signal 16 to the parental control circuitry 40 via  
the infrared diode 28. Except for the compressed code switch 22, the total parental control  
key 29, menu key 37, enter key 31 and the up/down 17/21, right/left 19/23 and activate 25  
15 keys, the remote controller is essentially the same as any other remote controller in function.  
It is to be noted that the typical keys of remote controllers, such as volume control and  
channel selection, are not shown on the controller of FIG. 1, but would ordinarily be present.

The total parental control key 29 and enter key 31 are used when selecting programs  
that are to be blocked or enabled for viewing on the television. The enter key 31 is used  
20 when entering the user's identification code that permits programming of the parental control  
circuitry to set up the programs to be blocked or enabled for viewing on the television  
receiver.

The compressed code switch 22 is provided to allow the user to lock the remote  
controller 12 in the compressed code mode while using a compressed code, which is encoded  
25 CDTL information. The compressed codes allow easy selection of a program to be enabled  
or blocked under parental control.

The remote controller 12 also can have a microphone 34, which can be used together  
with telephone 35, to download encoded CDTL information or compressed codes as well as  
other information such as time and IR codes for the particular devices. The compressed  
30 codes for programs that are to be enabled for viewing or blocked from viewing are entered  
via audio tones from telephone 35. In one embodiment, the compressed codes or program  
identifiers from a preselected list of violent programs are downloaded via telephone from a  
central data base. The parent calls the data base and then holds the television receiver 35,  
near the remote controller microphone 34. The received compressed codes are then  
35 communicated from the remote controller 12 to command controller 36.

Alternatively, the violent program may be coded and a printed television guide and the  
parent may enter the compressed code for the selected programs by using the keypad of the  
remote 12.

1           A possible realization of the command controller 36 and the compressed code decoder  
38 is shown in FIG. 5. The command controller 36 includes a microprocessor 80 for overall  
control and for performing the parental control functions, a read only memory 82 for  
program storage, a random access memory (RAM) 84, and input/output circuitry 86. This  
5   input/output circuitry 86 is adapted to receive commands from the infrared detector 32 and  
the key switch 33. The input/output has output interfaces to infrared emitter 46, and, when  
appropriate, to input selection switch 57 and vertical blanking interval decoder 437, the latter  
two of which are shown in FIG. 18. The input/output circuitry 86 has a bidirectional  
interface to clock 42. Commands are sent from command controller 36 via input/output 86  
10   to the programmable multiple channel filter 60, shown in FIG. 2, the tunable channel jammer  
400, shown in FIG. 12, and the tunable channel selector 420, shown in FIG. 15. The  
random access memory 84 includes a section for the parental control identification code and  
a section of stack memory for storing the channels, dates, times-of-day, and lengths for  
programs selected to be enabled for viewing or, alternatively in the case of exclusion, the  
15   channels, dates, times-of-day, and lengths for programs selected to be blocked from viewing.  
Either the ID number section, or the stack memory may be separate from RAM 84. As  
noted above, the compressed code, which are encoded CDTL information, may be  
advantageously used to simplify the parental control operation of the television.

20           One implementation of the compressed code decoder 38 is shown in FIG. 5. A  
microcontroller 90 with a random access memory 92 and a read only memory 94 has  
interfaces to microprocessor 80. The encoded CDTL is sent to microcontroller 90, which  
decodes the compressed code and returns CDTL information to microprocessor 80.

25           In order for the compressed code to be useful, it must be decoded, and apparatus for  
that purpose must be provided. A compressed code decoder 38 is included in the parental  
control circuitry 40 of FIG. 1 and is further shown in FIGS. 2, 13, and 16. If the command  
controller 36 determines that a compressed code has been received, then the compressed  
code will be sent to the compressed code decoder 38 for decoding. The compressed code  
decoder 38 converts the compressed code into channel, date, time and length (CDTL)  
information which is stored in RAM 84 and used by the command controller 36 to control  
30   the enabling and clocking of particular programs.

          U.S. Patent No. 5,335,079 issued August 2, 1994 describes apparatus and methods  
for compressed code encoding and decoding and is incorporated herein by reference as  
though set forth in full.

35           As described in U.S. Patent 5,335,079 the compressed code encoding and decoding  
can be made a function of the time read from the clock 42. This makes it very difficult for  
the key and therefore the coding technique to be duplicated or copied. It is also possible to  
have the decoding and encoding techniques dependent on any other predetermined or  
preprogrammable algorithm.

1           The clock 42 is also used for the timing of the operation of the command controller 36. When the proper date and time-of-day is read from clock 42, then the command controller 36 controls the parental control circuitry 40 to block or enable programs going to the cable box 43.

5           The operation of the parental control device 40 of FIG. 1 may be better understood by reference to the flow chart set forth in FIG. 6. The TV is turned on at step 300, and any other ancillary apparatus, such as parental control circuitry 40 in FIG. 1, is also turned on. If the key lock 33 is in the position for normal TV viewing, then the normal viewing of step 301 will be available. After completion of viewing, the TV is shut off (step 302). If the key  
10 lock 33 is in the parental control position, then upon turning on the TV, the selections that are enabled or blocked for viewing will be displayed on the screen as shown in step 303. A representative display of programs to be enabled in step 303 is shown in FIG. 7. A similar display is used to display blocked programs. The user of the apparatus may then select one of the programs that is enabled for viewing in step 304 and, upon completion of  
15 viewing, the TV is then shut off in step 305. If the programs to be blocked or enabled are to be modified, then the total parental control key, such as key 29 in FIG. 1, is pushed in step 307.

          The pushing of the total parental control key 29 will cause a message to appear on the screen of the TV such as the one shown in FIG. 8 wherein the user is requested to enter his  
20 or her identification (ID) code or number. Following the display of the message in step 308, the user enters his or her ID in step 309 by using the numbers of the key pad 20, for example, as shown in the remote controller of FIG. 1. The authorized user ID codes will have been previously stored in the parental control ID section of the RAM 84, as illustrated in FIG. 3. A typical user ID might be 6823 which, when entered, is compared in the verify  
25 step 310 under the control of the microprocessor 80 with the authorized parental control IDs stored in the RAM 84. The ID code number is entered by pressing keys numbered 6, 8, 2 and 3 and then the enter key 31. If the ID number that is entered is not an authorized number stored in RAM 84, then the user will be advised in step 311 by a message, such as the message of FIG. 9, displayed on the TV screen that the ID number is incorrect and the  
30 entry of another ID number will be requested. Steps 309 and 310 will, again, take place upon the entry of the new ID number and, if this ID number is again incorrect, the user will again be advised in step 311. Upon the entry of a number of incorrect ID numbers, such as 3, which are monitored in step 312, then the user will be advised in step 313 by a message such as the one shown in FIG. 10 that the ID numbers that have been entered are not  
35 authorized ID numbers and that the TV will be disabled for a period of time. The period of time may, for example, be 30 minutes or one hour or whatever may be selected during set up by the authorized user of the equipment.

1           If in the verification step 310 the user ID code that has been entered is an authorized  
ID, then in step 315 a menu will be displayed on the TV screen, such as shown in FIG. 11.  
The menu displayed in step 315 as shown in FIG. 11 has choices for enabling programs,  
5           blocking programs, and enabling V-block, which is a choice that allows the blocking of  
scenes in programs or entire programs that have objectionable violence, nudity, or language.  
One or more of the possible selections set forth in the menu of FIG. 11 may be selected in  
step 316. The user may also select entry 6 on the menu to override the parental control  
operation by pushing number 6 on, for example, the remote controller 12 of FIG. 1, for  
10           normal TV viewing. This will cause the override of step 317 to permit normal TV viewing  
(step 318) after which the TV will be shut off in step 319 or the menu of FIG. 11 may again  
be displayed in step 320 by pushing the MENU key 37 shown in FIG. 1.

          With the menu displayed on the screen of the television in step 315 or 320, the user  
need only push one of the numbered keys on key pad 20 to set up the mode for selecting one  
of the possible selections as shown in the menu of FIG. 11. The pushing of button 1 will  
15           permit the selection of programs to be enabled, as illustrated in FIG. 7. Upon pushing  
button key 1, for example, (step 321), the previous selections that have been made will be  
displayed along with instructions for making deletions or additional selections.

          If programs are to be deleted in step 322, the user activates the cursor by pressing  
button 25 (FIG. 1), and then moves the cursor on the TV screen displaying the available  
20           programs, e.g., as shown in FIG. 7, by use of the up/down keys 17 and 21 and the right/left  
keys 19 and 23 to the program that is to be deleted. With the cursor highlighting the  
program to be deleted, the enter key 31 is depressed to complete the deletion of the program  
from programs that may be viewed. In step 322, programs may, alternatively, be deleted  
by entering a compressed code for a program, as shown in FIG. 7. For example, if it is  
25           desired to delete the program FAMILY TIES, it is only necessary to enter on the keypad 20  
the numbers "1-5-6-5-7" and thereafter press the ENTER key 31. This will complete the  
deletion of FAMILY TIES from the programs available for viewing.

          Similarly, to add one or more programs for viewing in step 323, the compressed codes  
that appear with the programs listed in the printed TV schedules may advantageously be  
30           employed. The user, on deciding which of the programs listed in the TV schedule to make  
available for viewing, enters the compressed code for each of these programs by using the  
keypad 20 on the apparatus or on the remote controller, as shown in FIG. 1, and the enter  
key 31. The TV schedule may also be made available on a floppy disk, as disclosed in U.S.  
Patent Application Serial No. 07/882,291 filed May 13, 1992 and incorporated herein by this  
35           reference as though set forth in full. A floppy disk drive may be incorporated into the  
parental control circuitry, the VCR, or the television for reading the TV schedule and  
displaying same on the screen of the TV. If a floppy disk is used, then programs to be  
added may be selected by use of the cursor keys shown in FIG. 1 or by entry of the



1 compressed code that is listed in the TV schedule retrieved from the floppy disk.  
Additionally, the TV schedule may be available as part of the TV broadcast signal in the  
vertical blanking interval of the TV signal or as the video program. When the vertical  
blanking interval is used to carry the TV scheduling information, the schedule information  
5 may be retrieved from the TV broadcast signal by a vertical blanking interval decoder 437,  
as shown in FIGs. 18 and 19 and displayed on the TV monitor 442 of FIGs. 18 and 19, for  
example. Again, the programs to be added may be selected by use of the cursor keys as  
shown in FIG. 1, or by entry of the compressed code as described above.

The user may also select programs to be blocked from viewing on the TV by pushing  
10 button 2 when the menu is being displayed on the TV screen in step 315. Steps 321', 322',  
and 323' operate in an analogous manner to steps 321, 322, and 323.

The V-block mode may be selected by pushing button 3 when the menu is being  
displayed on the TV screen in step 316. The V-block mode enables the automatic blocking  
of programs or scenes in programs that have objectionable violence, nudity, or language.  
15 The V-block operation is described further below.

During the selection process, each selection to be added is stored in RAM 84 and at  
the completion of the selection process transferred to the stack memory portions of RAM 84  
for storage in temporal order. Upon the completion of each selection from the menu, the  
menu key 37 is depressed to return to step 315 for display of the menu shown in FIG. 11.  
20 At any time in the selection process, the key 7 may be depressed while the menu is being  
displayed to compare the selections that have been made for possible inconsistencies, which  
is done in step 354. For example, if programs have been both enabled and blocked this will  
be noted as an inconsistency. If there are no inconsistencies, then the microprocessor 80  
causes the selections to be stored in step 356 in the stack memory portion of the RAM 84.  
25 If inconsistencies do exist in step 354, then the program, channel, date, or time that is to be  
deleted to avoid the inconsistency is selected in step 355 by depressing the appropriate key  
1, 2 or 4 and going through the delete step 322 or 322'. Once there are no inconsistencies  
in the selections and the selections are stored in the stack memory portion of RAM 84, then  
the TV is shut off in step 357.

30 Another specific embodiment of the parental control circuitry 40 is shown in FIG. 12.  
Most of the elements of FIG. 12 are the same as those shown in FIG. 2 so an explanation  
of those will not be repeated. However, a key difference is tunable channel jammer 400  
which is imposed between signal source input line 39 and parental control output line 41.  
The purpose of tunable channel jammer 400 is to block the viewing of particular channels,  
35 or programs. Implementing the programmable multiple channel filter of FIG. 3 might be  
fairly expensive, because each channel filter would have to be fairly precise in order to not  
interfere with adjacent channels and the number of components involved would result in a  
high cost. Rather than filtering a channel as in FIG. 3, tunable channel jammer 400 instead

1 has the purpose of jamming a channel or multiple channels. If a channel is selected to be  
blocked from viewing, then the jamming on that channel can be continuous. If particular  
programs have been selected to be blocked from viewing, then the respective channels for  
those programs will be jammed on that date starting with the time of day for that program  
5 and end after the program has ended. The start and end time for the programs can be  
attained from the CDTL information in the G codes.

FIG. 13 shows an apparatus for implementing tunable channel jammer 400. One  
implementation, a narrow band noise source 402 is mixed with a tunable frequency generator  
404 in mixer 406 and then combined with signal source input line 39 in combiner 408 to  
10 produce the parental control output on line 41. The tunable frequency generator 404 would  
be tuned to place the narrow band noise inside the channel to be jammed. Multiple channels  
can be jammed by time sharing the circuitry of FIG. 13. For example, if channels, 2, 3, 5,  
and 10 are to be jammed at the same time then the tunable frequency generator 404 would  
be tuned to each of those channels for a set period of time and then would skip to the next  
15 channel to be jammed and so on. If the duty cycle of the jamming on any particular channel  
is high enough, then the channel will be unwatchable. By time sharing the apparatus in this  
manner considerable costs can be saved.

In another implementation, instead of having a narrow band noise source 402, a low  
frequency generator 402 is supplied. Again, tunable frequency generator 404 is used to place  
20 the low frequency within the channel to be jammed. Tests have shown that a noise generator  
with a 1 kilohertz bandwidth centered at 55 megahertz is sufficient to block the viewing of  
channel 2. The circuitry of FIG. 13 may be time shared between as many as 10 channels at  
a time which results in a 10 percent jamming duty cycle on any particular channel. FIG. 14  
is an illustration of a frequency spectrum showing jamming occurring in channels 2, 4, and  
25 7.

The programmable multiple channel filter 60 of FIG. 2 and the tunable channel  
jammer 400 of FIG. 12 both have the purpose of blocking a channel or a program from  
viewing by a user of a television. FIG. 15 is a specific implementation of parental control  
circuitry 40 which allows particular channels or programs to be enabled for viewing on a  
30 television. Again, most of the elements of FIG. 15 are similar to those in FIG. 2, however,  
tunable channel selector 420 is different and has the purpose of enabling certain channels or  
programs for viewing.

FIG. 16 shows an implementation of tunable channel selector 420. In FIG. 16, the  
signal on signal source input line 39 is frequency down converted by mixing this signal with  
35 the output of tunable local oscillator 422 in frequency down-converter 424. The output of  
frequency down-converter 424 is then filtered by intermediate frequency filter 426 to pass  
only the channel to be enabled for viewing. This channel is then frequency up converted by  
frequency up-converter 428, which mixes the output of intermediate frequency filter 426 with



1 the output of tunable local oscillator 422. The amount of frequency down conversion in  
frequency down-converter 424 is equal to the amount of frequency up conversion in  
frequency up-converter 428. The tunable local oscillator 422 is the same for frequency  
down-converter 424 and frequency up-converter 428.

5 FIG. 17 illustrates the frequency spectrum at signal source input line 39, the frequency  
down-converter 424 output, the intermediate frequency filter 426 output, and the output on  
parental control output line 41 of FIG. 16. As shown in FIG. 17, the result is that on  
parental control output line 41 only the selected channel is remaining which is channel 10 in  
FIG. 17. Since at any one time only one channel is enabled for viewing, the command  
10 controller 36 must command the cable box 43 to tune itself to the proper channel. This is  
done by communicating through infrared emitter 46 to infrared detector 48 on cable box 43.

A parental control television 430 is shown in FIG. 18. The parental control television  
430 has parental control circuitry 40 incorporated into it. The parental control circuitry 40  
inside the parental control television 430 can be implemented as previously discussed to  
15 either block certain programs and channels from viewing or enable certain programs and  
channels for viewing. Specifically, parental control circuitry 40 can be implemented as  
shown in FIG. 2, FIG. 12, or FIG. 15. By incorporating the parental control circuitry 40  
inside the parental control television 430, the extra cost and inconvenience of a separate unit  
is avoided. The signal source input line 39 is connected to the parental control television 430  
20 by a tamper proof connector 432 to prevent tampering. The cable box 43 and VCR 44 can  
be located outside of the parental control television 430. The parental control output on line  
41 can be sent directly to the cable box 43, or can bypass the cable box 43 via line 444. The  
input selection switch 57 within the parental control television 430 selects either an input  
from VCR 44 or cable box 43 for viewing on television monitor 442. In this  
25 implementation, a normal tuner 438 and video circuits 440 are provided.

Another capability that can be provided within the parental control television 430 is  
the feature previously referred to as "V-Block," which allows the blocking of programs or  
scenes in programs that have objectional violence, nudity or language. V-block is  
implemented by including in the VBI of a program, a code indicating the presence of  
30 possibly objectionable matter and decoding the vertical blanking interval of a television raster  
scan to retrieve the code for controlling the viewing on the television.

A scene V-Block indication can be put into one of the vertical blanking intervals lines  
which is described below along with FIGs. 19 and 20. The vertical blanking lines are then  
decoded by vertical blanking interval decoder 437. If vertical blanking interval decoder 437  
35 detects a scene V-block indication in the vertical blanking interval lines, and if the V-block  
mode has been enabled by parental control circuitry 40 via line 441, then the vertical  
blanking interval decoder 437 will open the V-block switch 439. This will block the  
offending scene from the television monitor 442. After the offending scene is finished, the

1 vertical blanking internal decoder 437 detects the absence of scene V-block indication in the vertical blanking interval lines and closes the V-Block switch 439, which reconnects the television monitor 442 to the video circuits 440. If all the scenes in a program have scene V-block indications, then the entire program is blocked.

5 The V-Block feature will also operate to block offending scenes from any programs played on the VCR which have a scene V-Block indication in the vertical blanking interval. This provides parental control for programs that are recorded with a scene V-block indication.

The V-Block approach does not provide for control by rating levels, such as PG-13, R, X etc. Control by rating level is desirable to give the parent or viewer the ability to select by level rather than on or off approach as provided by V-block.

To provide control of reception of portions of a program, be it a radio broadcast or a television broadcast, for example, data packets indicative of a particular rating level is associated with a program segment and is transmitted with the segment. The segment may be as short as one scene in a movie or television program or longer. Each segment that has a rating level lower than a standard level, such as G (general audience) for movies may be rated and a data packet included at the beginning of the segment.

The user of the receiver enters a rating level in apparatus at the receiving end, such as PG-13, and thereafter all segments rated lower than PG-13, such as R and X, will be blocked. This rating level approach is also applicable to taped programs.

The insertion of data packets in the VBI and the retrieval of and use thereof is described in greater detail in copending application SN 08/176,852 filed 12/29/93 which is incorporated herein by this reference as though set forth in full.

FIG. 19 is an illustration of a video signal having rating data incorporated into the video signal 660 to allowing rating level control of the viewing of a program. In FIG. 23 it is shown that G-rated video 662 is being received and then at a later time a PG-13 rating start data 664 is embedded in the vertical blanking interval. The PG-13 rating start data 664 is followed by a PG-13 rated video 666, which is then followed by a PG-13 end data 668 which is embedded in the vertical blanking interval. After the PG-13 rating end data 668, a G-rated video 670 portion continues. When a program is transmitted, inserters at the network headend can be used to insert the rating start signal data, rating end signal data, and text into the vertical blanking interval. The PG-13 rating start data and PG-13 rating end data are used to mark the beginning of the PG-13 rated video segment and the end of the PG-13 rated video segment. The purpose of the inserted PG-13 rating start data, PG-13 rating end data and text in the vertical blanking interval, is to allow a user such as a parent, rating level control of the viewing of the program contained in the video signal.

For example, suppose a parent has young children and wishes to show only a G-rated program or video to the children. The portion of the program that is G-rated including G-

1 rated video 662 and G-rated video 670 would be displayed on a television in a normal manner. If apparatus is provided such as shown in FIG. 25, then the PG-13 rating start data is extracted from the vertical blanking interval and used to block the following PG-13 rated video segment data 666 from the television monitor. During the time that the PG-13 rated  
5 video segments data 666 is being blocked from the television monitor, the text data 667 embedded in the vertical blanking interval is extracted from the vertical blanking interval. Also, throughout the time that the PG rated video segment data 666 is blocked from the television monitor, the television screen is switched to a blue screen. On the blue screen the text data 667 is displayed. The text contains the description of what is happening in the plot  
10 during that PG-13 rated video segment in a nonviolent style. For example, a bloody fight might be blocked and then the text of FIG. 28 displayed (e.g. A and B fight. B does not survive.) The text data 667 remains on the television monitor until the PG-13 rating end data 668 data is extracted from the vertical blanking interval. Then the G-rated video 670 appears on the television screen.

15 In another embodiment the text that is extracted from the vertical blanking interval is sent to an audio synthesizer which is used to voice the text data. This is especially useful for children who cannot yet read.

FIG. 20 is another illustration of a video signal that contains data for allowing rating level control of television viewing. In sequence of time, G-rated video 682 is followed by  
20 PG-13 rating start 684, which in turn is followed by PG-13 rated video segment 686. At the end of the PG-13 rated video segment, PG-13 rating end data 688 occurs. Thereafter an R rated video segment 692, preceded by an R rating start data 690, which is embedded in the vertical blanking interval occurs. At the end of the R rated video segment 692 an R rating end data 694 is embedded in the vertical blanking interval. Following the G-rated video 696  
25 portion continues. Text 687 and text 693 are embedded in the vertical blanking interval during the PG-13 rated video segment and the R rated video segment, respectively. Suppose the user wishes to allow viewing of PG-13 rated video. Then with apparatus, such as shown in FIG. 21 which is described below, the user can enter data for the desired rating level which in this case would be PG-13. Then the apparatus would play G rated video 682 and  
30 continue playing PG-13 rated video segment 686. When R rating start data 690 is detected the apparatus blocks the R rated video segment from the television screen and instead displays text 693 after it is extracted from the vertical blanking interval. When R rating end data 694 is detected, the display of G rated video 696 portion continues. This example illustrates that the apparatus does not always block a marked video segment. The blocking  
35 of a rated video segment depends on the desired rating level entered by the user.

FIG. 19 and FIG. 20 show video signals that can be transmitted on the air or by land based broadcast or satellite broadcast or over a cable, (including fiber optics).

FIG. 25 illustrates an apparatus for allowing rating level control of the viewing of a

1 program. A television signal source 702 provides the video signal and can be an antenna for  
receiving over the air video signals or a cable for receiving cable television. A tuner 704  
tunes the apparatus for receiving the video signal. A vertical blanking interval slicer 702 is  
coupled to the output of tuner 704 and has outputs to a rating and text decoder 708, EDS  
5 decoder 710, and closed-captioned decoder 712. The EDS decoder 710 and the closed  
captioned decode 712 are for decoding data sent via extended data services or closed  
captioned services, as described above. The rating and text decoder 708 has the purpose of  
extracting the rating data and the text data from the vertical blanking interval to allow rating  
level control of the viewing of a program. The rating data is decoded by the rating and text  
10 decoder 708 and is used to send a video blanking signal on line 716 to switch 718 under the  
control of command controller 724. The switch 718 decouples the output of tuner 704 from  
the television monitor 722 to preclude display of the relevant program segment. Text data  
in the vertical blanking interval, as described in connection with FIGS. 23 and 24, is decoded  
by rating and text decoder 708 and sent to character generator 714 and audio synthesizer 715.  
15 The output of character generator 714 and audio synthesizer 715 are sent to adder 720 which  
become the characters and the audio sent to the television monitor 722. A desired rating  
level is sent to the rating and text decoder 708 from command controller 724 which has a  
memory 726 which can store the entered desired rating level 728. The desired rating level  
can be entered either via keypad 731 or via remote controller 732. An IR transmitter 734  
20 in the remote controller 732 communicates the desired rating levels to the command  
controller via IR receiver 730.

FIG. 22 is a more detailed schematic of rating and text decoder 708. The input from  
VBI slicer 706 is sent to text decoder 752 and rating data detector 740. The output of the  
text decoder 752 is the text data which is sent to character generator 714 and to audio  
25 synthesizer 715. The output of the rating data detector 740 consists of, for example, PG,  
PG-13, R, and X rating data. As shown in FIGS. 23 and 24 the rating data can be inserted  
at the beginning to mark the beginning of a rated video segment and at the end of a video  
segment to mark the end of the video segment. Alternatively, the rating data could be sent  
continuously or near continuously during the rated video segment and embedded in the  
30 vertical blanking interval to mark the video segment for control of viewing of the rated video  
segment.

The rating data from rating data detector 740 is sent to device 748. The device 748  
has the purpose of determining from the extracted rating data and the entered desired rating  
level that is sent from the command controller 724, whether or not to block a received audio  
and video signal from a television monitor. The output of device 748 is sent to switch 718.  
35 One way of implementing device 748 is to provide a table 750 which ranks the order of the  
rating levels from the highest rating G to the lowest rating X. The rating hierarchy is G,  
PG, PG-13, R, and X. The user enters a desired rating level and the device 748 detects



1 whether the rating data indicates a rating level that is lower than the desired rating level. For  
example, if the desired rating level is PG-13 and the rating data indicates a video segment  
that has a rating level of R then the video segment has a rating level that is lower than the  
desired rating level. Thus a video and audio blocking signal is sent on line 716 to switch 718  
5 and opens switch 718 to block the video and audio of the program segment from the  
television monitor. If the desired rating level is PG-13 and the rating data indicates a rating  
level of PG, then because the rating data has a higher rating in table 750 than PG-13, the  
video and audio blocking signal does not open switch 718 and the video and audio signal is  
sent to the television monitor thereby allowing viewing of the PG material.

10 Rather than transmit a video signal containing the rating data and text in the vertical  
blanking interval, a video tape can be provided that has the rating data and the text recorded  
onto the tape. For example, FIG 23 shows a G rated video 760 at the start of the tape  
followed by a PG-13 start data 762 in the vertical blanking interval followed by a PG-13  
rated video segment 764. Text data 765 is embedded in the vertical blanking interval during  
15 the PG-13 rated video segment 764. Then a PG-13 end data 766 is embedded in the vertical  
blanking interval followed by a G rated video segment 768. FIG. 24 shows a portion of a  
tape with two rated video segments, a PG-13 rated video segment and an R rated video  
segment 780. Each has a start and an end rating data (772, 776 and 778, 783, for example)  
embedded in the VBI and text in the VBI such as text 775 and 781. The portion shown in  
20 FIG. 28 starts with G rated video 770 and ends in G rated video 782.

A tape that is recorded in the manner shown in FIGS. 23 and 24 can be played on a  
video cassette recorder such as video cassette recorder 800 shown in FIG. 25. The VCR 800  
which is similar to the VCR disclosed in FIG. 1 of the above referenced application SN  
08/176,852, contains a vertical blanking interval decoder 860 that decodes the vertical  
25 blanking interval from video signals read from the tape 842 by video logic 807 or received  
from a television signal source through tuner 861. The VBI decoder 860 is coupled to VCR  
control logic 821. The VBI decoder 860 and the VCR control logic 821 perform the  
functions of vertical blanking interval slicer 706 and rating data and text data decoder 708  
shown in FIG. 25. A video and audio blocking signal on line 873 controls switch 874 in the  
30 same manner as the video and audio blocking signal on line 716 controls switch 718. The  
VCR control logic decodes the text data and sends the text data to character generator 870  
and audio synthesizer 871 which have outputs that communicate to adder 876 that inserts the  
characters or the voiced text from the audio synthesizer as the signal sent to the television  
monitor. A desired rating level can be entered via remote controller 880 via IR transmitter  
882 and remote signal receiver 872. The desired rating level can also be entered via keypad  
35 877 into VCR control logic 821 or by a similar keypad remote 880.

Alternatively, the VCR 800 can also contain a tuner 861 and can record or apply to  
the television monitor a program from a television signal source. The transmitted program

1 can be recorded onto the tape 842 and then when the program is later played the feature of  
the VCR that allows rating level control of the viewing of a program can be used. The  
operation of the feature for allowing rating control is the same for VCR 800 as for the  
apparatus described in FIG. 21.

5 FIG. 26 is a flow diagram for a method for allowing rating level control of the  
viewing of a program. In step 900 rating data indicating the rating level of each program  
video segment is inserted into the program video segments. Also text data representing the  
plot of the video segment is inserted into the program video segment. The rating data and  
the text data can be inserted into the vertical blanking interval of the program video  
10 segments. In step 904 the video is recorded along with the rating data and the text data in  
the vertical blanking interval. In step 906 the video is transmitted along with the rating data  
and the text data inserted in the program video segments. Then in step 908 the transmitted  
video is recorded along with the rating data and the text data onto a tape.

FIG. 27a and FIG. 27b are flow diagrams of a method for allowing rating level  
15 control of a program. In step 910 rating data is extracted from the beginning of a program  
video segment. The rating data indicates the rating level of the programmed video segment.  
In step 912 the extracted rating data is compared with a desired rating level. In step 914 it  
is determined whether the extracted rating data has a lower rating than the desired rating  
levels. If the rating data is equal to or higher than the desired rating level then the method  
20 returns to step 910. If the extracted rating data has a lower rating level than the desired  
rating level, then step 916 is performed. In step 916 the video and audio are blocked from  
the television monitor. Then in step 918 text data is extracted from the program video  
segment. The text data is used to generate characters for the text in step 920 and audio in  
step 921. In step 922 the characters are displayed on a television monitor. In step 921 audio  
25 is synthesized for voicing the text, and in step 923 the audio is applied to the television  
monitor. In step 924 (shown in FIG. 31b) it is determined whether an end rating data has  
been extracted from the video signal. If not, then the text displayed in step 922, and audio  
applied in step 923 continues. FIG. 28 illustrates an example text display. If the end rating  
data is extracted from the video signal in step 924 then in step 926 the text and audio is  
30 discontinued and the video and audio signal of the programs are unblocked from the  
television monitor and the program is again available for viewing.

The described embodiments of the invention are only considered to be preferred and  
illustrative of the inventive concept, the scope of the invention is not to be restricted to such  
embodiments. Various and numerous other arrangements may be devised by one skilled in  
35 the art without departing from the spirit and scope of this invention.

It is therefore intended by the appended claims to cover any and all such applications,  
modifications and embodiments within the scope of the present invention.



**1 WHAT IS CLAIMED IS:**

1. An apparatus for transmitting a program to allow rating level control of viewing of the program, the apparatus comprising:  
5 means for inserting rating data into a program video segment to indicate the rating of the program video segment;  
means for inserting text data representative of the content of the program video segment into the program video segment; and  
10 means for transmitting the program video segment having the inserted rating data and the inserted text data.

2. The apparatus of Claim 1 wherein the means for inserting rating data comprises means for inserting the rating data into the vertical blanking interval of the program video segment.  
15

3. The apparatus of Claim 2 wherein the means for inserting rating data further comprises means for inserting PG, PG-13, R, or X rating data.

4. The apparatus of Claim 2 wherein the means for inserting rating data further comprises:  
20 means for inserting a first rating data at the beginning of the program video segment to indicate the rating level of the program video segment; and  
means for inserting a second rating data at the end of the program video segment to indicate the end of the rating level of the program video segment.  
25

5. The apparatus of Claim 1 wherein the means for inserting text data comprises means for inserting the text data into the vertical blanking interval of the program video segment.

6. An apparatus for recording a program to allow rating level control of viewing of the program, the apparatus comprising:  
30 means for inserting rating data into a program video segment to indicate the rating of the program video segment;  
means for inserting text data representative of the content of the program video segment into the program video segment; and  
35 means for recording the program video segment having the inserted rating data and the inserted text data.

- 1           7.    The apparatus of Claim 6 wherein the means for inserting rating data into a program video segment comprises means for inserting the rating data into the vertical blanking interval of the program video segment.
- 5           8.    The apparatus of Claim 7 wherein the means for inserting rating data further comprises means for inserting PG, PG-13, R, or X rating data.
9.    The apparatus of Claim 7 wherein the means for inserting rating data further comprises:
- 10               means for inserting a first rating data at the beginning of the program video segment to indicate the rating level of the program video segment; and
- means for inserting an second rating data at the end of the program video segment to indicate the end of the rating level of the program video segment.
- 15           10.   The apparatus of Claim 6 wherein the means for inserting text data into the program video segment comprises means for inserting the text data into the vertical blanking interval of the program video segment.
11.   An apparatus for allowing rating level control of the viewing of a program, the
- 20   apparatus comprising:
- means for entering a desired rating level for controlling the viewing of a program;
- means for extracting rating data from a program video segment, the rating data indicating a rating level of the program video segment;
- 25               means for extracting text data representative of the content of the program video segment from the program video segment;
- means for determining whether the extracted rating data indicates that the program video segment has an acceptable rating level for viewing with regard to the entered desired rating level;
- 30               means for blocking playing of the program video segment if it is determined that the extracted rating data indicates that the program video segment has an unacceptable rating level for viewing with regard to the entered desired rating level; and
- means for substituting display of the extracted text data representative of the content of the program video segment for the blocked program video segment, if it is
- 35   determined that the extracted rating data indicates that the program video segment has an unacceptable rating level for viewing with regard to the entered desired rating level.

1           12.    The apparatus of Claim 11 further comprising means for storing the entered  
desired rating level.

5           13.    The apparatus of Claim 11 wherein the means for entering a desired rating level  
comprises a remote controller.

          14.    The apparatus of Claim 11 wherein the means for extracting rating data from  
a program video segment of the program comprises a vertical blanking interval decoder.

10          15.    The apparatus of Claim 14 wherein the means for extracting rating data further  
comprises means for extracting PG, PG-13, R, or X rating data.

          16.    The apparatus of Claim 14 wherein the means for extracting rating data further  
comprises:

15               means for extracting a first rating data at the beginning of the program video  
segment that indicates the rating level of the program video segment; and  
                  means for extracting a second rating data at the end of the program video  
segment that indicates the end of the rating level of the program video segment.

20          17.    The apparatus of Claim 11 wherein the means for extracting text data from the  
program video segment comprises a vertical blanking interval decoder.

          18.    The apparatus of Claim 11 wherein the means for determining whether the  
extracted rating data indicates that the program video segment has an acceptable rating level  
25   for viewing with regard to the entered desired rating level comprises a comparator.

          19.    The apparatus of Claim 11 wherein the means for blocking playing of the  
program video segment comprises a switch.

30          20.    The apparatus of Claim 11 wherein the means for displaying the extracted text  
data comprises     a character generator coupled to the means for extracting text data from  
the program video segment.

          21.    The apparatus of Claim 11 wherein the means for displaying the extracted text  
35   data comprises an audio synthesizer for voicing the text data.

1           22. A video recorder/player for allowing rating level control of the viewing of a  
program recorded on a media played on the video recorder/player, the video recorder/player  
comprising:

5               means for entering a desired rating level for controlling the viewing of a  
program;

              means for extracting rating data from a played program video segment, the  
rating data indicating a rating level of the program video segment;

              means for extracting text data representative of the content of the played  
program video segment from the program video segment;

10             means for determining whether the extracted rating data indicates that the  
program video segment has an acceptable rating level for viewing with regard to the entered  
desired rating level;

              means for blocking playing of the program video segment if it is determined that  
the extracted rating data indicates that the program video segment has an unacceptable rating  
15             level for viewing with regard to the entered desired rating level; and

              means for substituting display of the extracted text data representative of the  
content of the program video segment for the blocked program video segment, if it is  
determined that the extracted rating data indicates that the program video segment has an  
unacceptable rating level for viewing with regard to the entered desired rating level.

20

              23. The apparatus of Claim 22 further comprising means for storing the entered  
desired rating level.

25             24. The video recorder/player of Claim 22 wherein the means for entering a desired  
rating level comprises a remote controller.

              25. The video recorder/player of Claim 22 wherein the means for extracting rating  
data from a program video segment of the program comprises a vertical blanking interval  
decoder.

30

              26. The apparatus of Claim 26 wherein the means for extracting rating data further  
comprises means for extracting PG, PG-13, R, or X rating data.

35             27. The apparatus of Claim 26 wherein the means for extracting rating data further  
comprises:

              means for extracting a first rating data at the beginning of the program video  
segment that indicates the rating level of the program video segment; and

1 means for extracting a second rating data at the end of the program video  
segment that indicates the end of the rating level of the program video segment.

5 28. The video recorder/player of Claim 22 wherein the means for extracting text  
data from the program video segment comprises a vertical blanking interval decoder.

10 29. The video recorder/player of Claim 22 wherein the means for determining  
whether the extracted rating data indicates that the program video segment has an acceptable  
rating level for viewing with regard to the entered desired rating level comprises a  
comparator.

30. The video recorder/player of Claim 22 wherein the means for blocking playing  
of the program video segment comprises a switch.

15 31. The video recorder/player of Claim 22 wherein the means for displaying the  
extracted text data comprises a character generator coupled to the means for extracting text  
data from the program video segment.

20 32. The apparatus of Claim 22 wherein the means for displaying the extracted text  
data comprises an audio synthesizer for voicing the text data.

33. A method for transmitting a program to allow rating level control of viewing  
of the program, the method comprising the steps of:

25 inserting rating data into a program video segment to indicate the rating of the  
program video segment;

inserting text data representative of the content of the program video segment  
into the program video segment; and

transmitting the program video segment having the inserted rating data and the  
inserted text data.

30

34. The method of Claim 33 wherein the step of inserting rating data comprises the  
step of inserting the rating data into the vertical blanking interval of the program video  
segment.

35 35. The method of Claim 34 wherein the step of inserting rating data further  
comprises the step of inserting PG, PG-13, R, or X rating data.

1           36. The method of Claim 34 wherein the step of inserting rating data further comprises the steps of:

                  inserting a first rating data at the beginning of the program video segment to indicate the rating level of the program video segment; and

5                   inserting a second rating data at the end of the program video segment to indicate the end of the rating level of the program video segment.

                  37. The method of Claim 33 wherein the step of inserting text data comprises the steps of inserting the text data into the vertical blanking interval of the program video segment.

                  38. A method for recording a program to allow rating level control of viewing of the program, the method comprising the steps of:

                          inserting rating data into a program video segment to indicate the rating of the program video segment;

15                   inserting text data representative of the content of the program video segment into the program video segment; and

                          recording the program video segment having the inserted rating data and the inserted text data.

20

                  39. The method of Claim 38 wherein the step of inserting rating data into a program video segment comprises the step of inserting the rating data into the vertical blanking interval of the program video segment.

25           40. The method of Claim 39 wherein the step of inserting rating data further comprises the step of inserting PG, PG-13, R, or X rating data.

                  41. The method of Claim 39 wherein the step of inserting rating data further comprises the steps of:

30                   inserting a first rating data at the beginning of the program video segment to indicate the rating level of the program video segment; and

                          inserting an second rating data at the end of the program video segment to indicate the end of the rating level of the program video segment.

35           42. The method of Claim 38 wherein the step of inserting text data into the program video segment comprises the step of inserting the text data into the vertical blanking interval of the program video segment.



- 1           43. A method for allowing rating level control of the viewing of a program, the method comprising the steps of:
- entering a desired rating level for controlling the viewing of a program;
- extracting rating data from a program video segment, the rating data indicating
- 5           a rating level of the program video segment;
- extracting text data representative of the content of the program video segment from the program video segment;
- determining whether the extracted rating data indicates that the program video segment has an acceptable rating level for viewing with regard to the entered desired rating
- 10           level;
- blocking playing of the program video segment if it is determined that the extracted rating data indicates that the program video segment has an unacceptable rating level for viewing with regard to the entered desired rating level; and
- substituting display of the extracted text data representative of the content of the
- 15           program video segment for the blocked program video segment, if it is determined that the extracted rating data indicates that the program video segment has an unacceptable rating level for viewing with regard to the entered desired rating level.
44. The method of Claim 43 further comprising the step of storing the entered
- 20           desired rating level.
45. The method of Claim 43 wherein the step of extracting rating data from a program video segment of the program comprises the step of decoding data in the vertical blanking interval.
- 25           46. The method of Claim 45 wherein the step of extracting rating data further comprises the step of extracting PG, PG-13, R, or X rating data.
47. The method of Claim 45 wherein the step of extracting rating data further
- 30           comprises the steps of:
- extracting a first rating data at the beginning of the program video segment that indicates the rating level of the program video segment; and
- extracting a second rating data at the end of the program video segment that indicates the end of the rating level of the program video segment.
- 35           48. The method of Claim 47 further comprising the step of unblocking the viewing of video and audio and stopping the display of extracted text data when the second rating data is extracted.

1           49. The method of Claim 43 wherein the step of extracting text data from the  
program video segment comprises the step of decoding a vertical blanking interval.

5           50. The method of Claim 43 wherein the step of determining whether the extracted  
rating data indicates that the program video segment has an acceptable rating level for  
viewing with regard to the entered desired rating level comprises the steps of a comparing  
the extracted rating data with the desired rating level.

10          51. The method of Claim 43 wherein the step of displaying the extracted text data  
comprises the step of generating characters for display.

          52. The method of Claim 43 wherein the step of displaying the extracted text data  
comprises the step of synthesizing audio for voicing the text data.

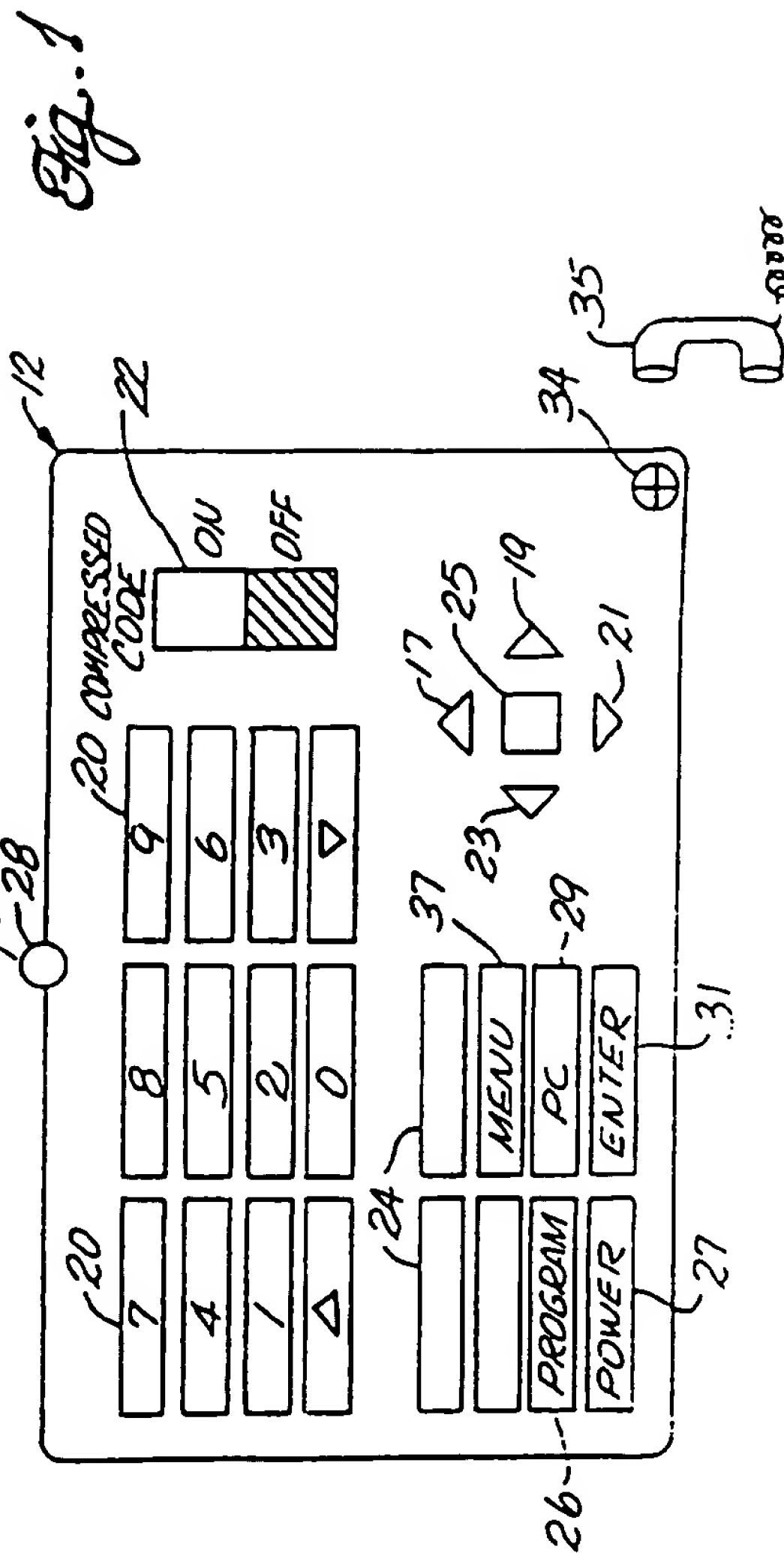
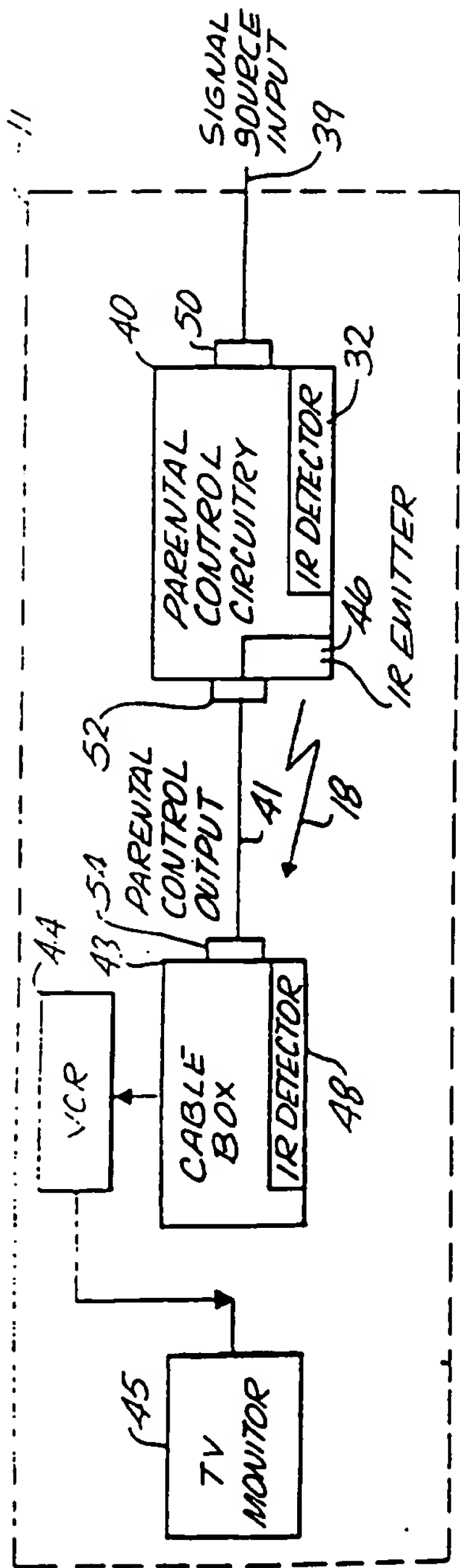
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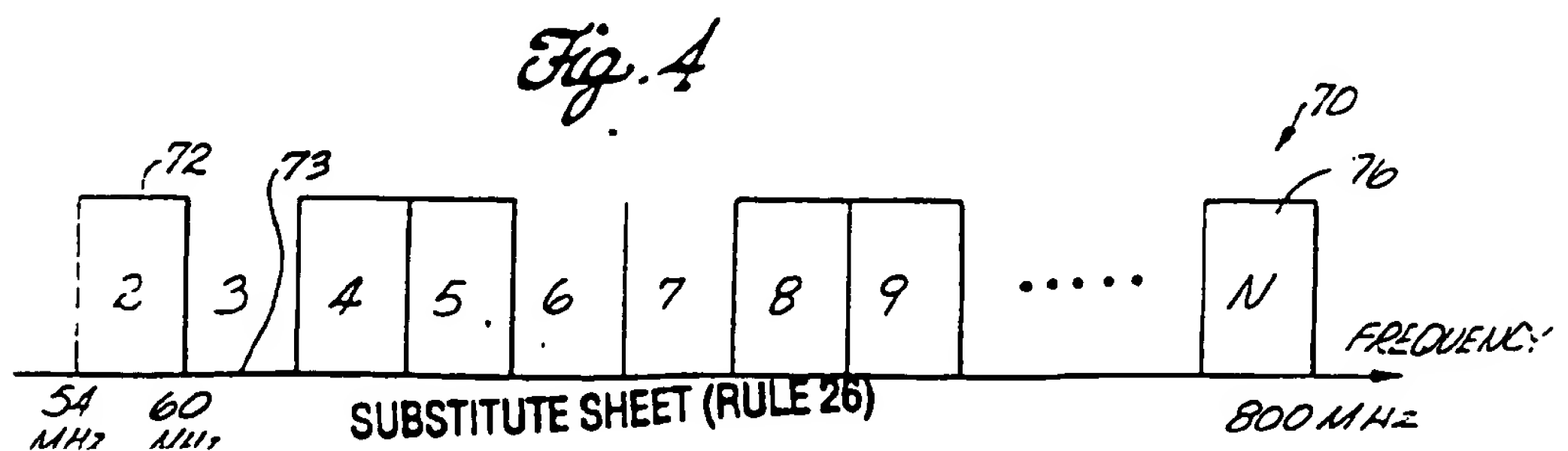
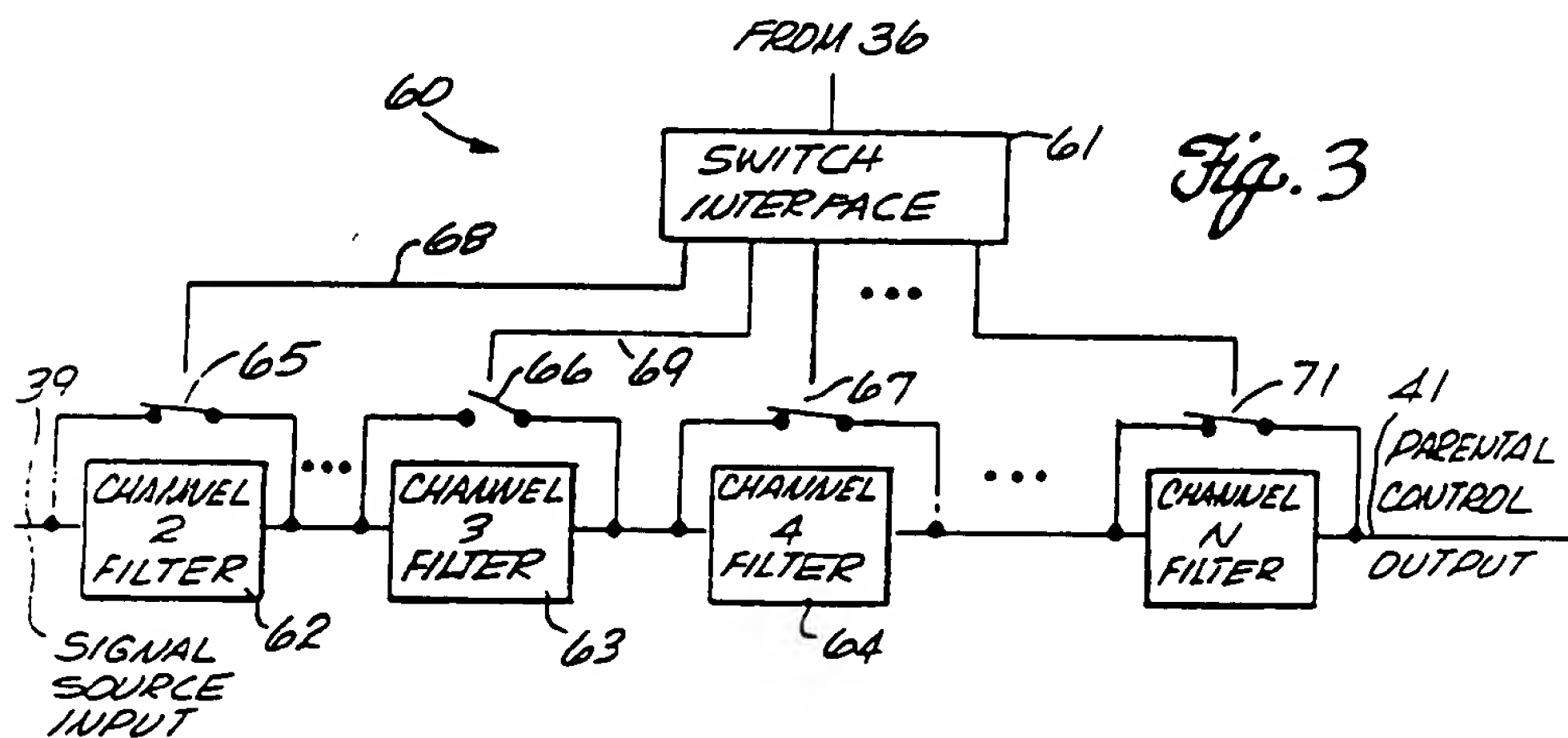
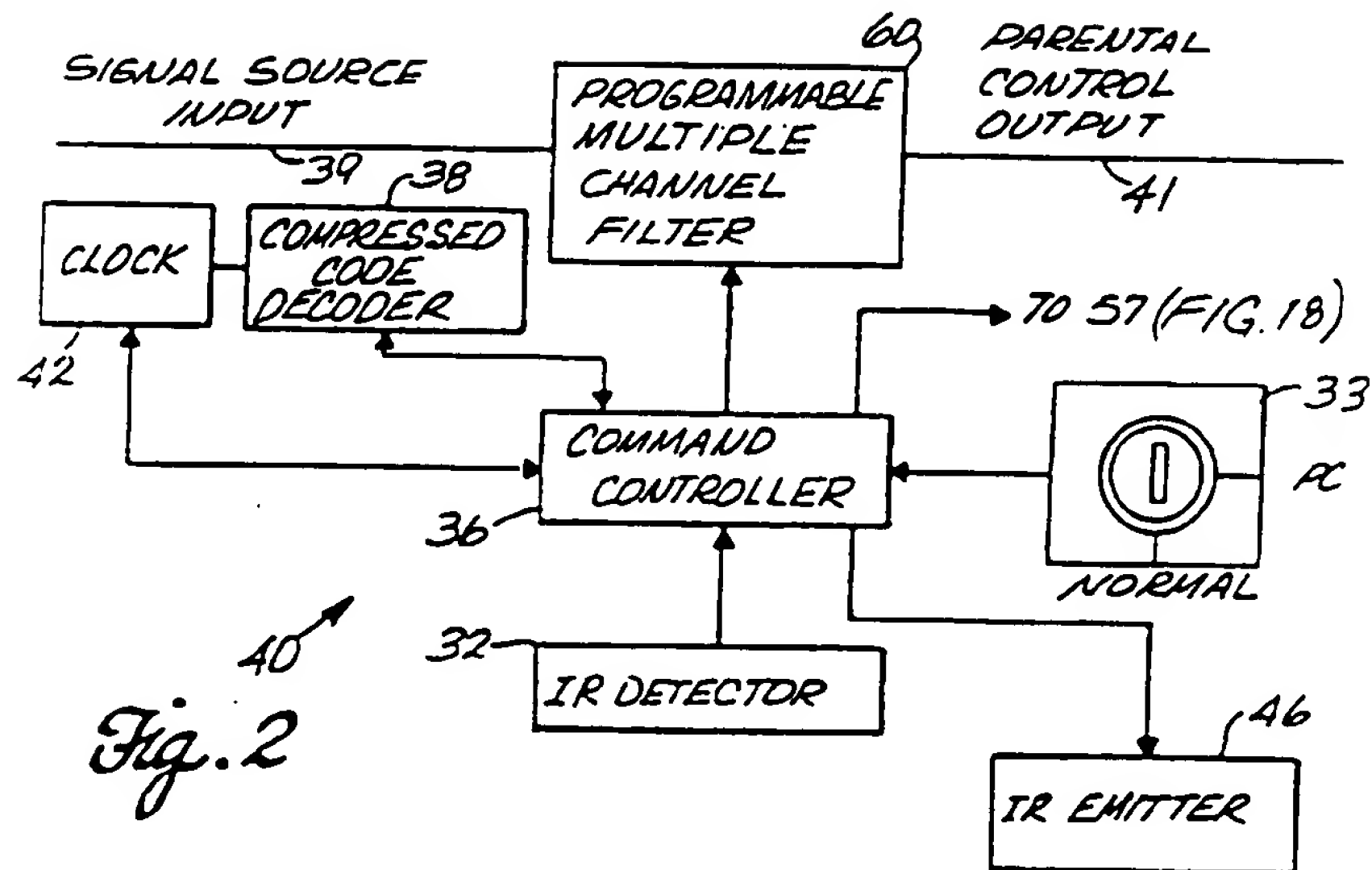
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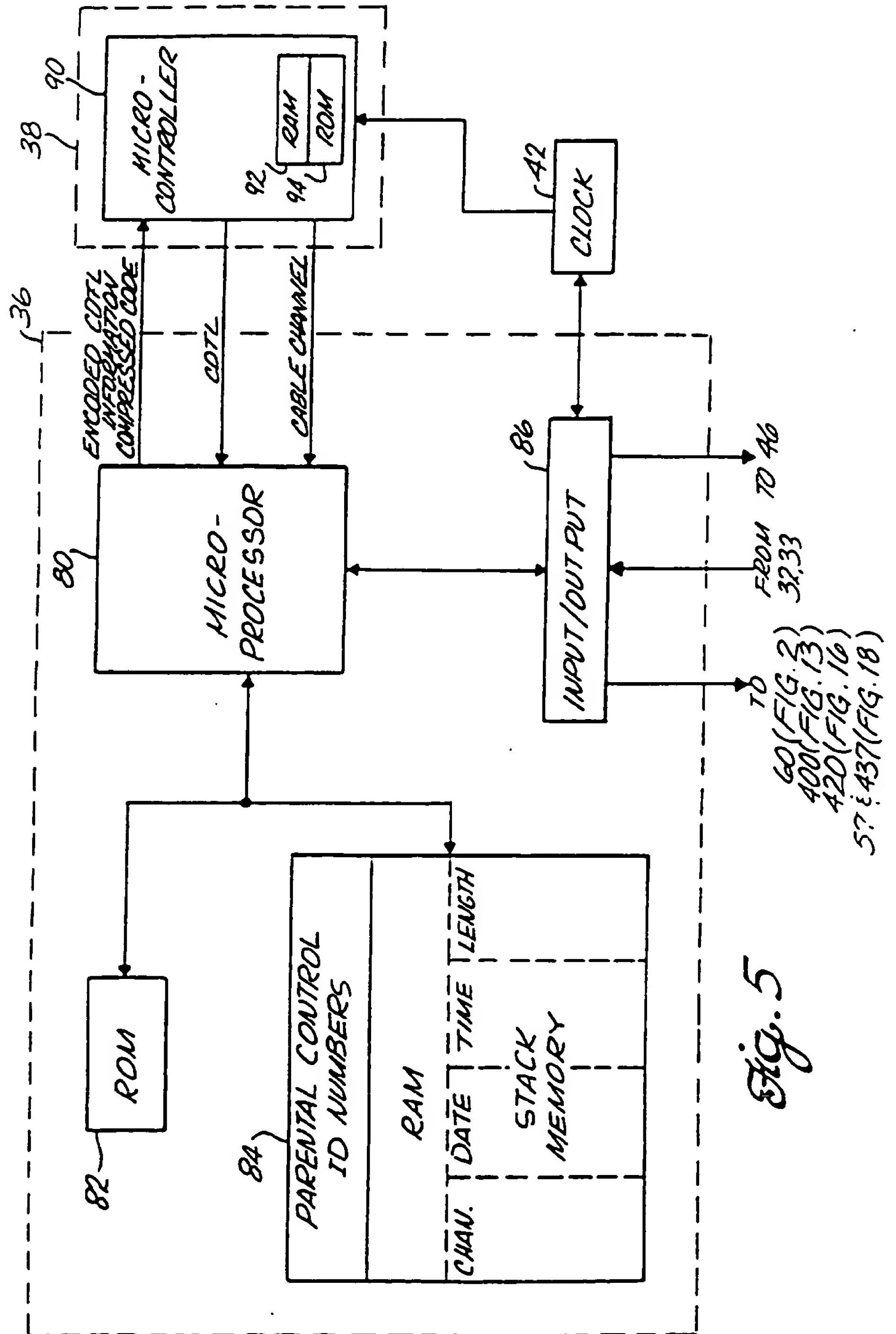
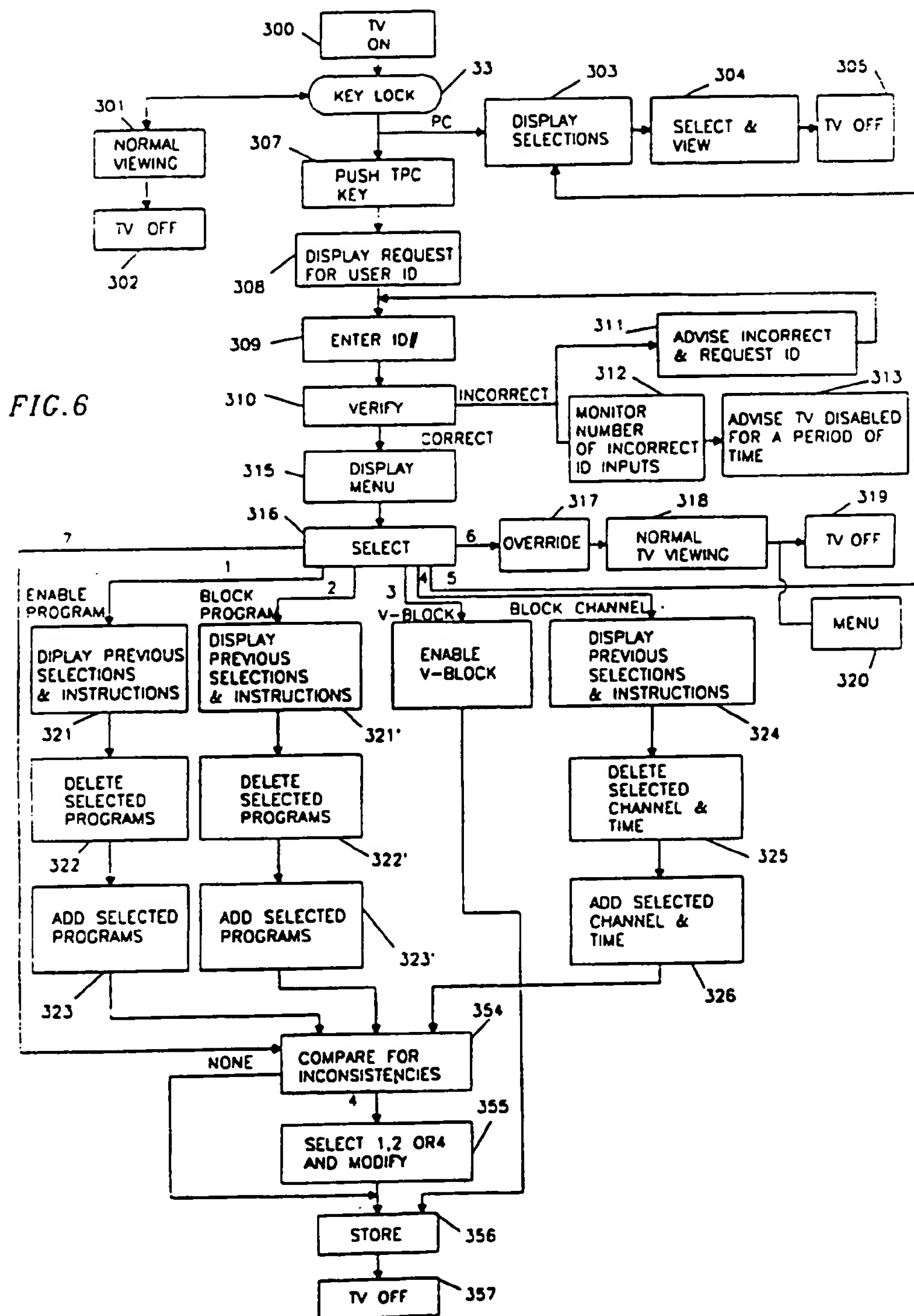


Fig. 5





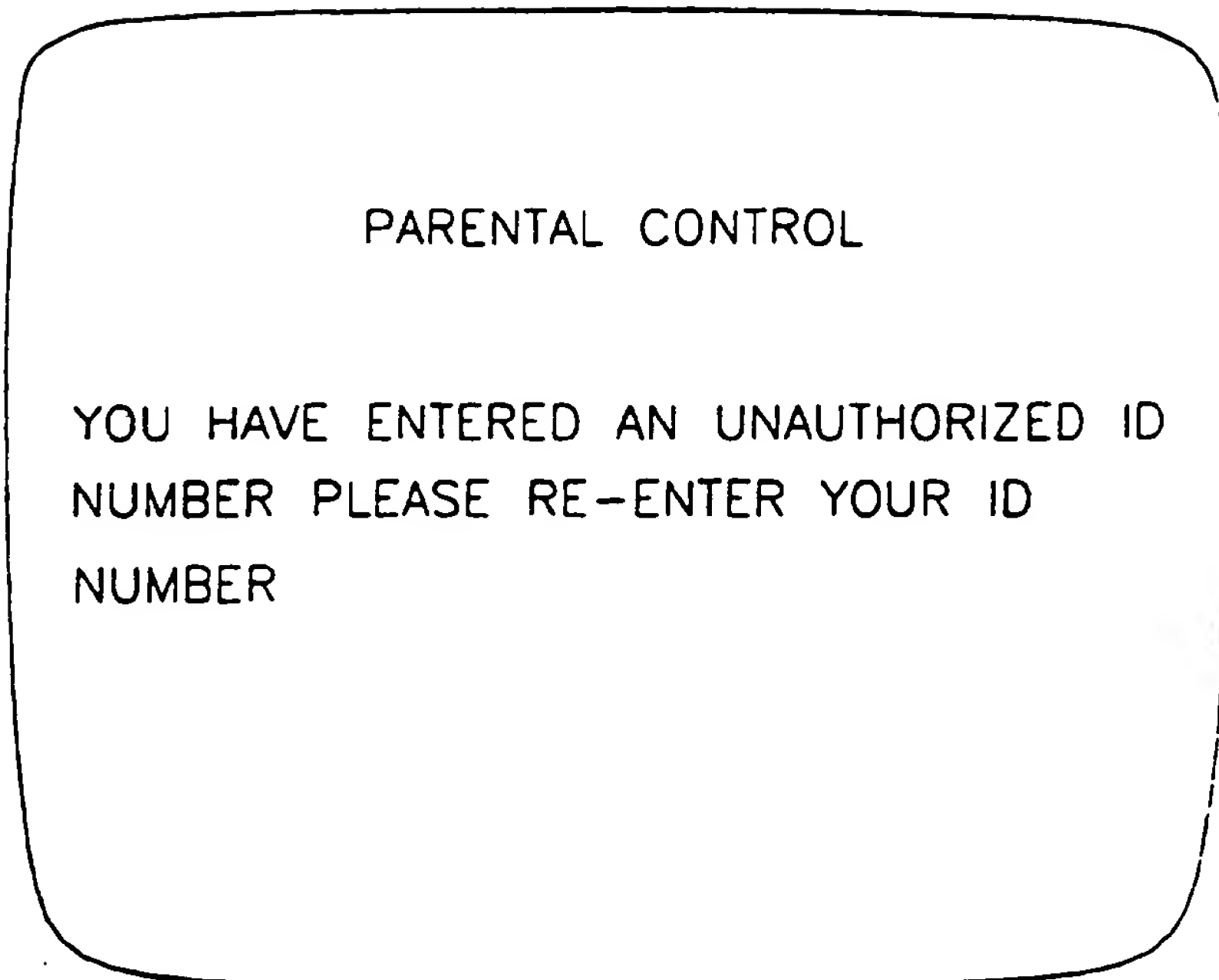
*FIG. 7*

PARENTAL CONTROL		
THE FOLLOWING PROGRAMS ARE AVAILABLE FOR VIEWING		
4:30pm - 5:00pm	4	CARTOON EXPRESS (23561)
5:00pm	11	L.A. LAKERS V. BOSTON CELTICS (0765)
6:30pm - 7:00pm	11	FAMILY TIES (15657)
7:00pm - 7:30pm	2	BEVERLY HILLBILLIES (49677)

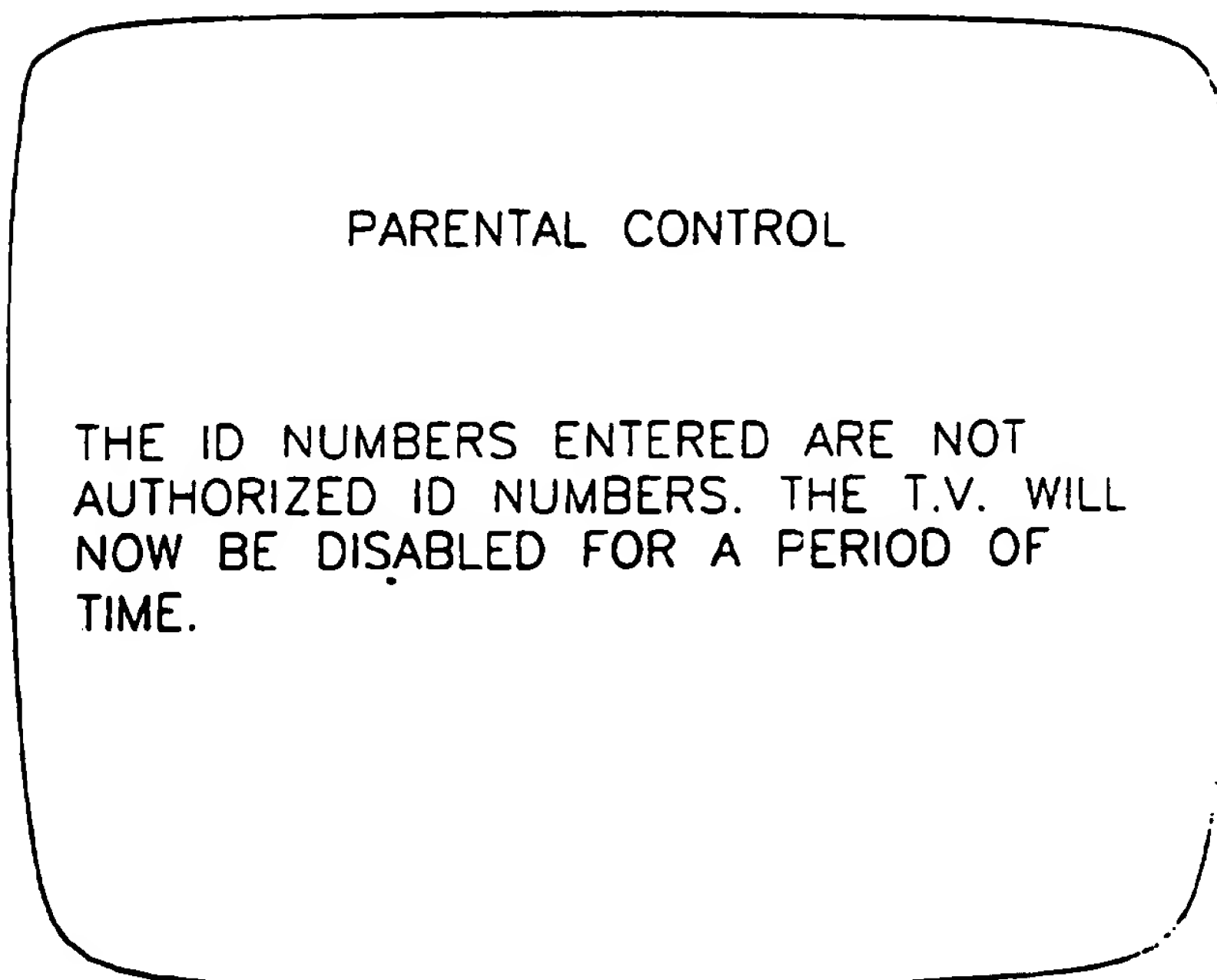
*FIG. 8*

PARENTAL CONTROL	
TO USE PARENTAL CONTROL FEATURE, ENTER YOUR IDENTIFICATION (ID) NUMBER	

*FIG. 9*

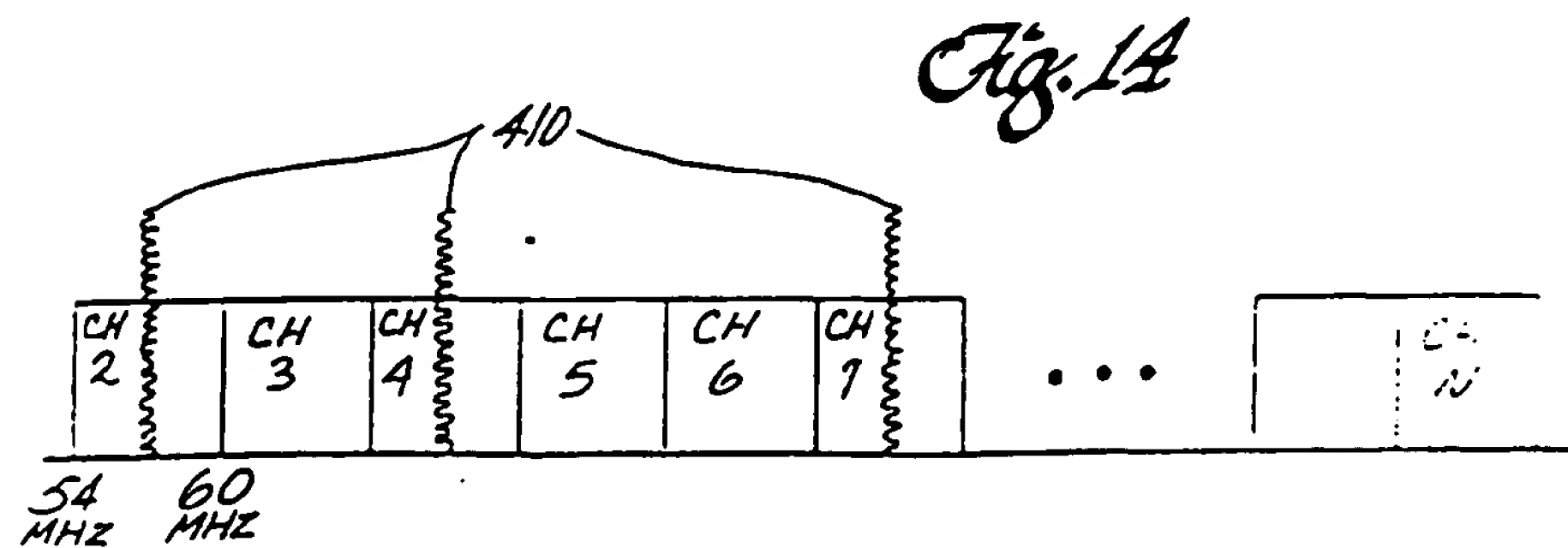
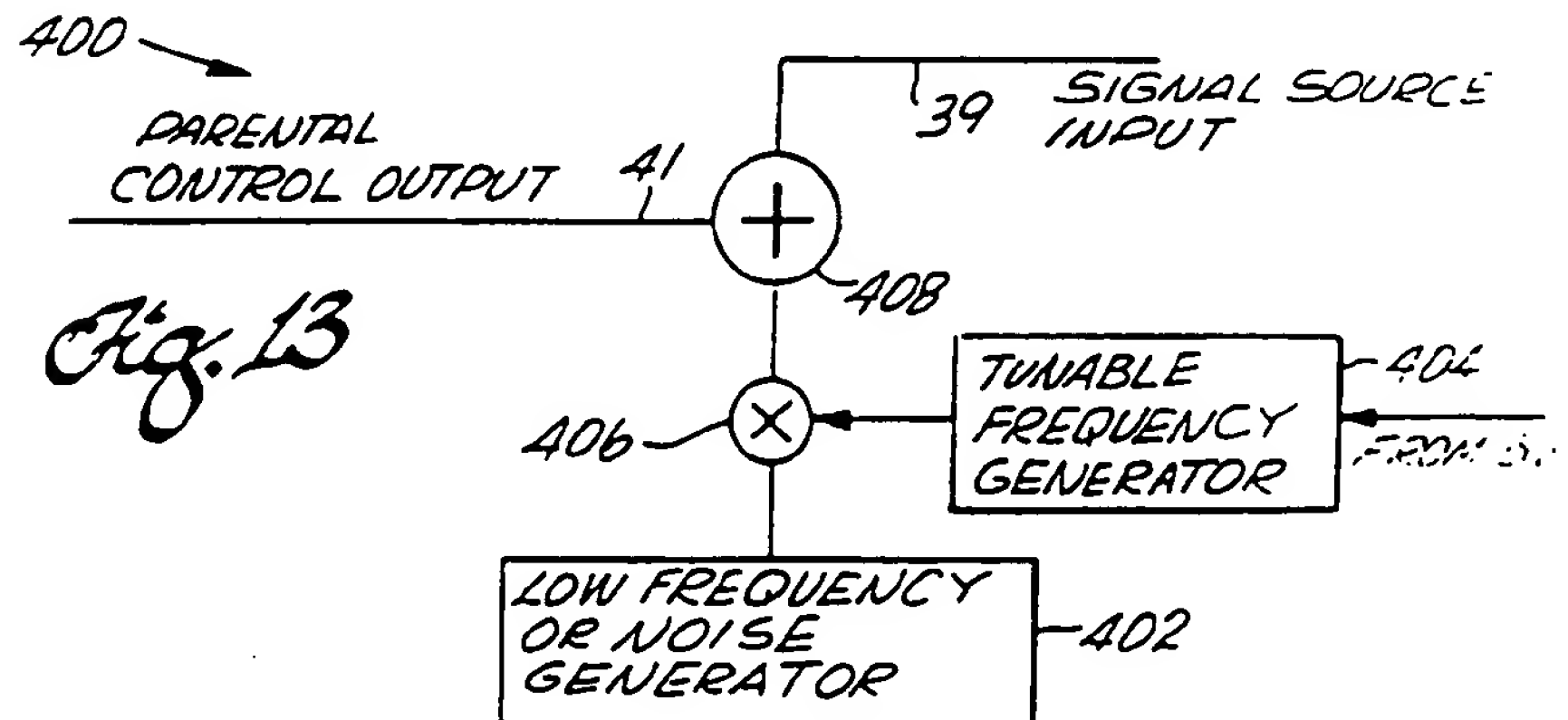
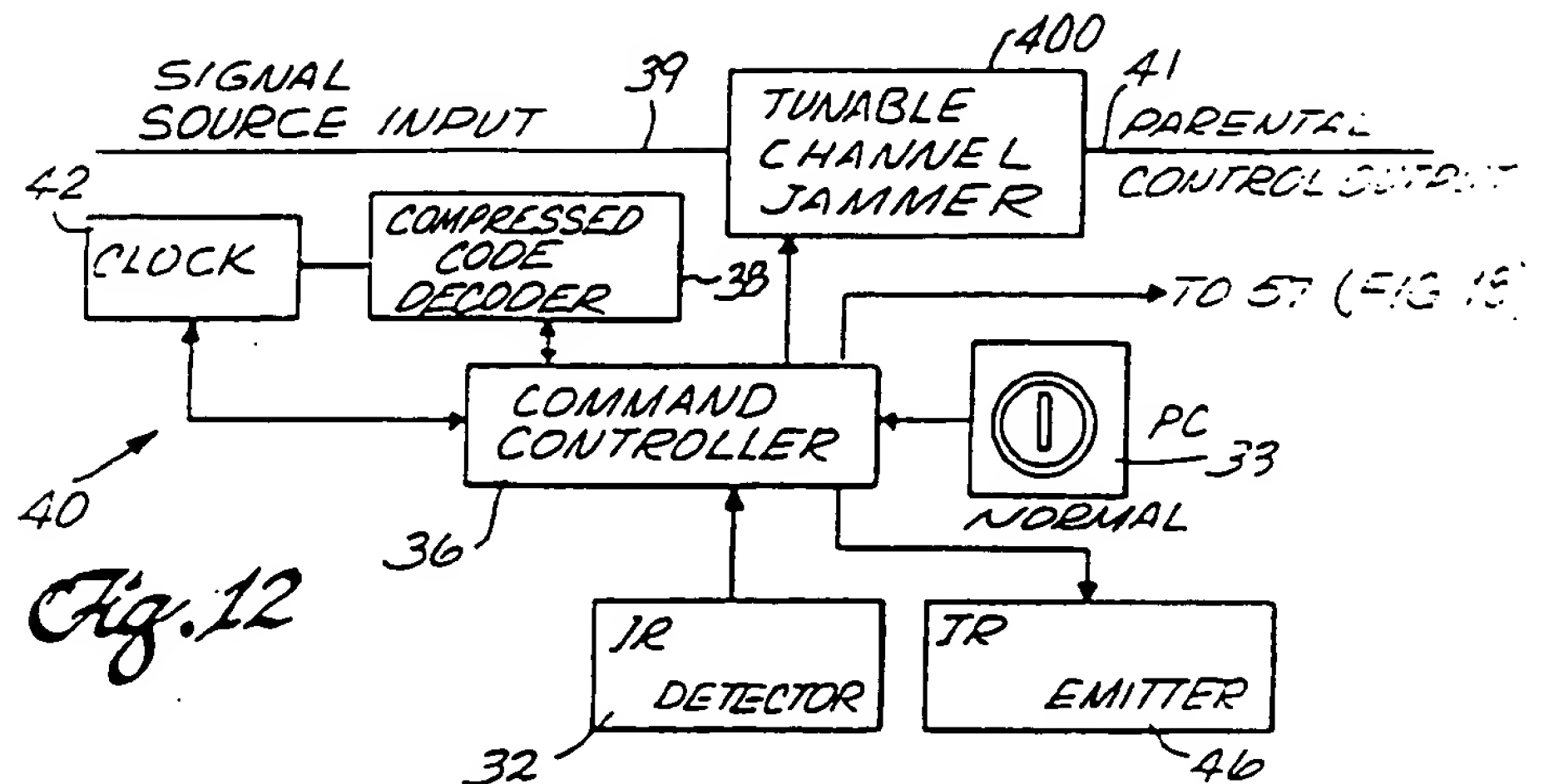


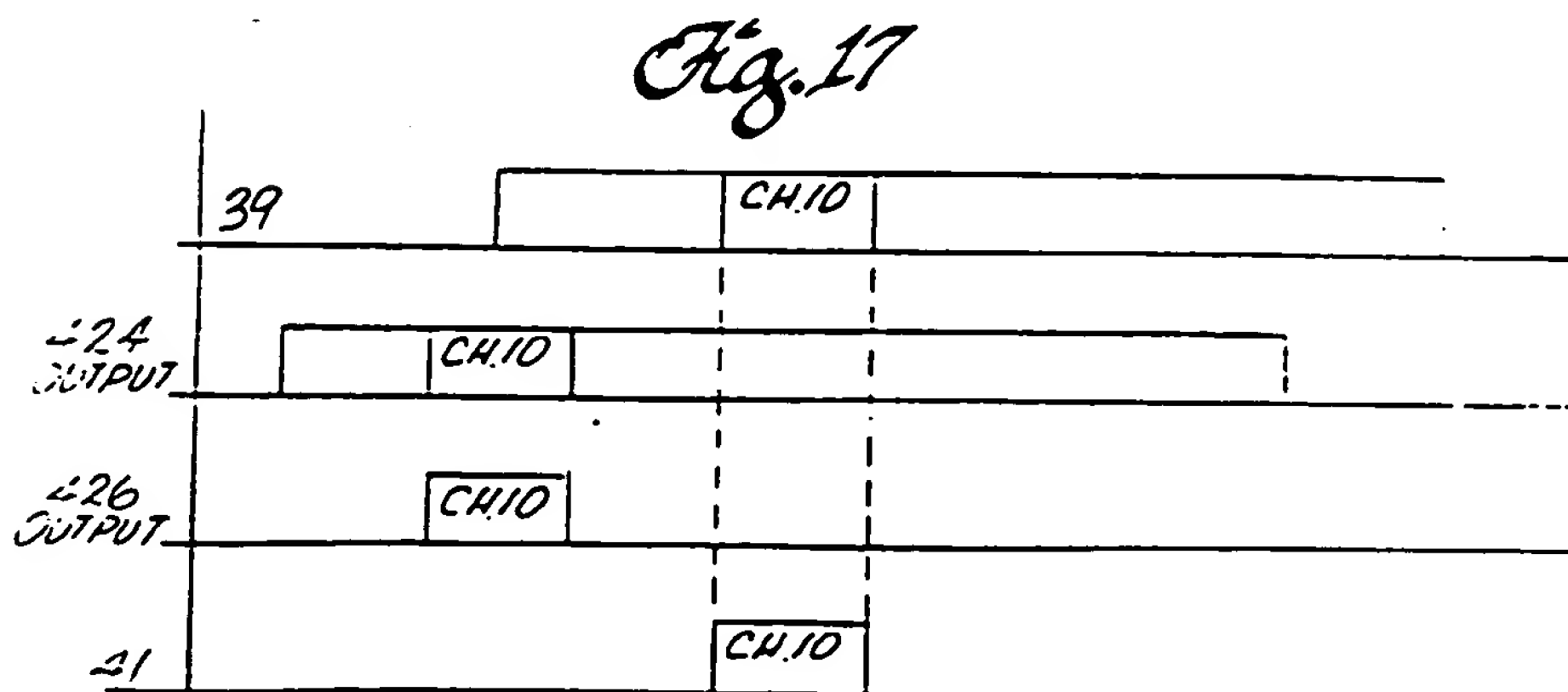
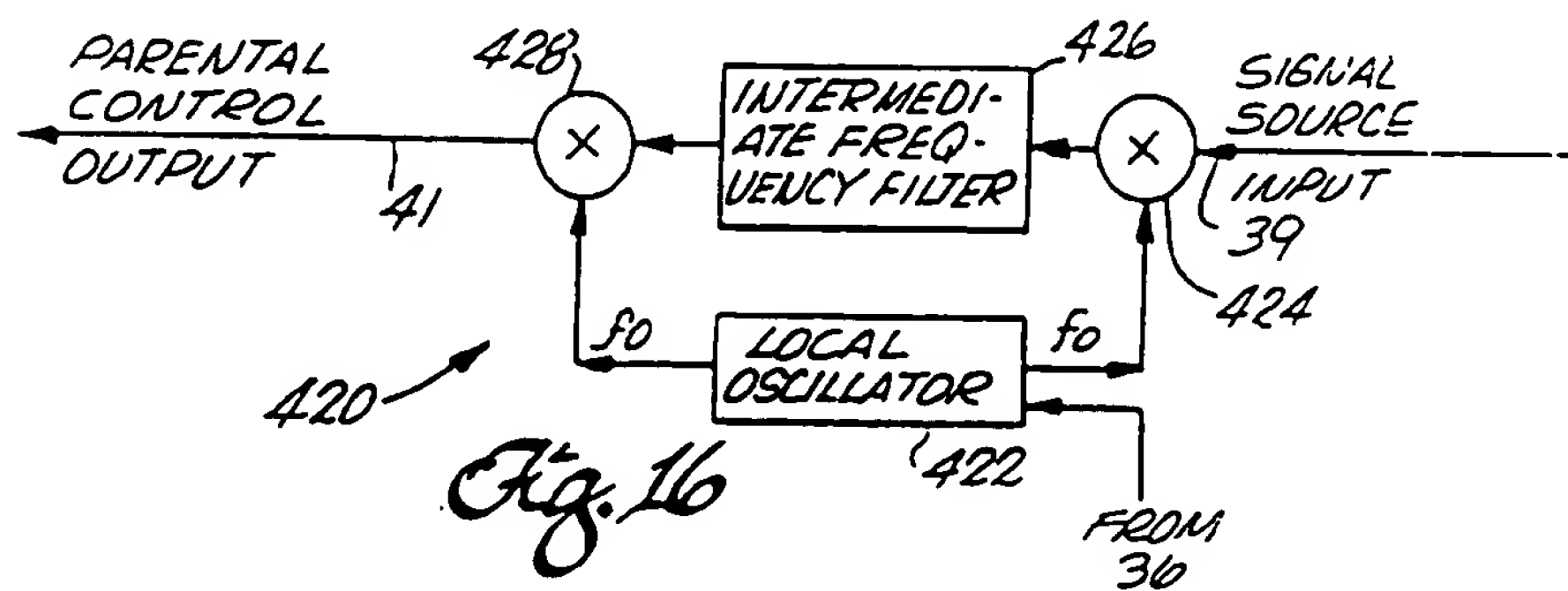
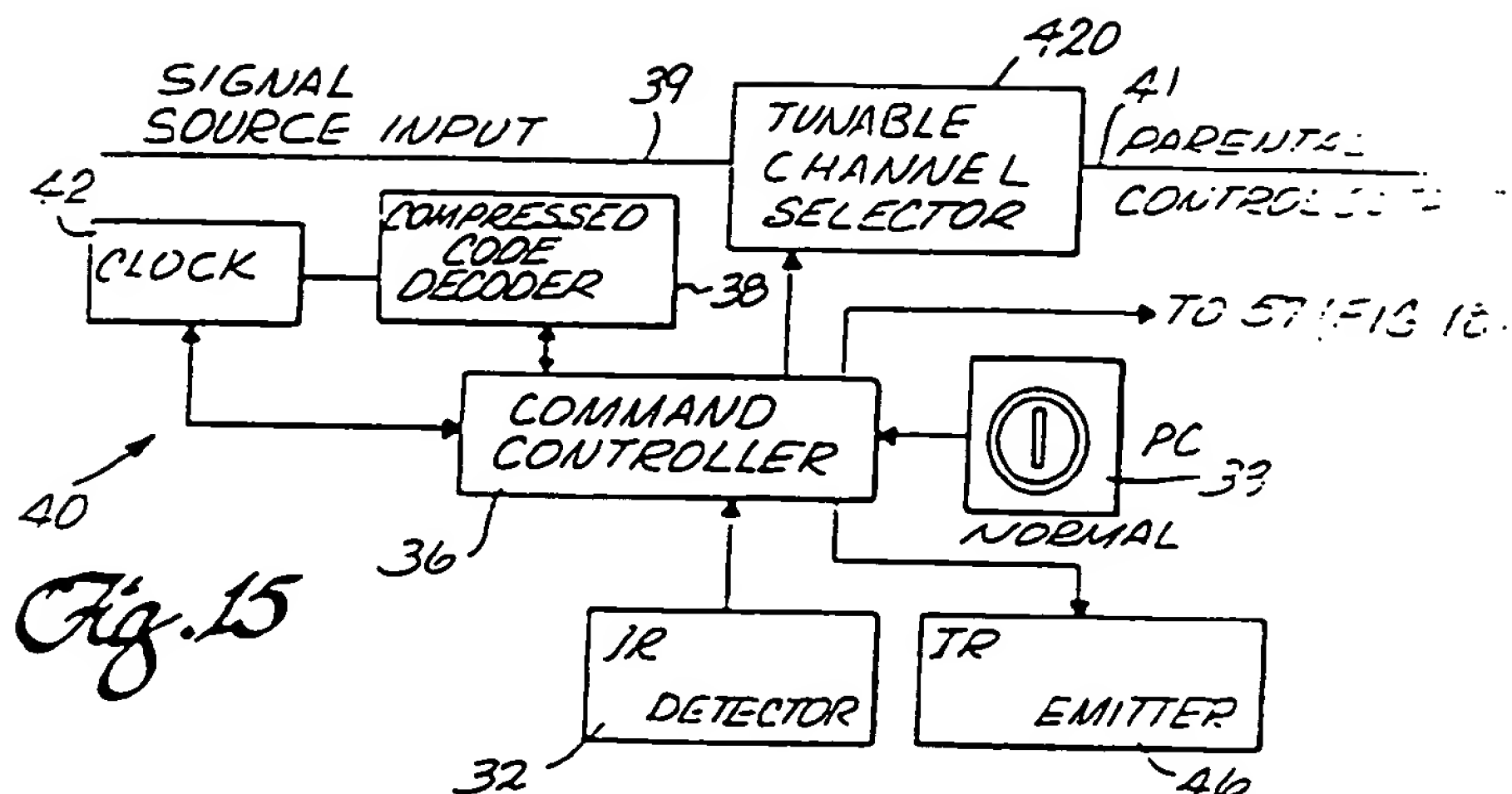
*FIG. 10*



*FIG. 11*

PARENTAL CONTROL	
POSSIBLE SELECTIONS	TO MAKE SELECTION - PUSH
1. ENABLED PROGRAMS	1
2. BLOCKED PROGRAMS	2
3. V BLOCK	3
4. BLOCK CHANNEL	4
5. REVIEW	5
6. TO OVERRIDE FOR NORMAL T.V. VIEWING	6
7. COMPARE FOR INCONSISTENCIES	7





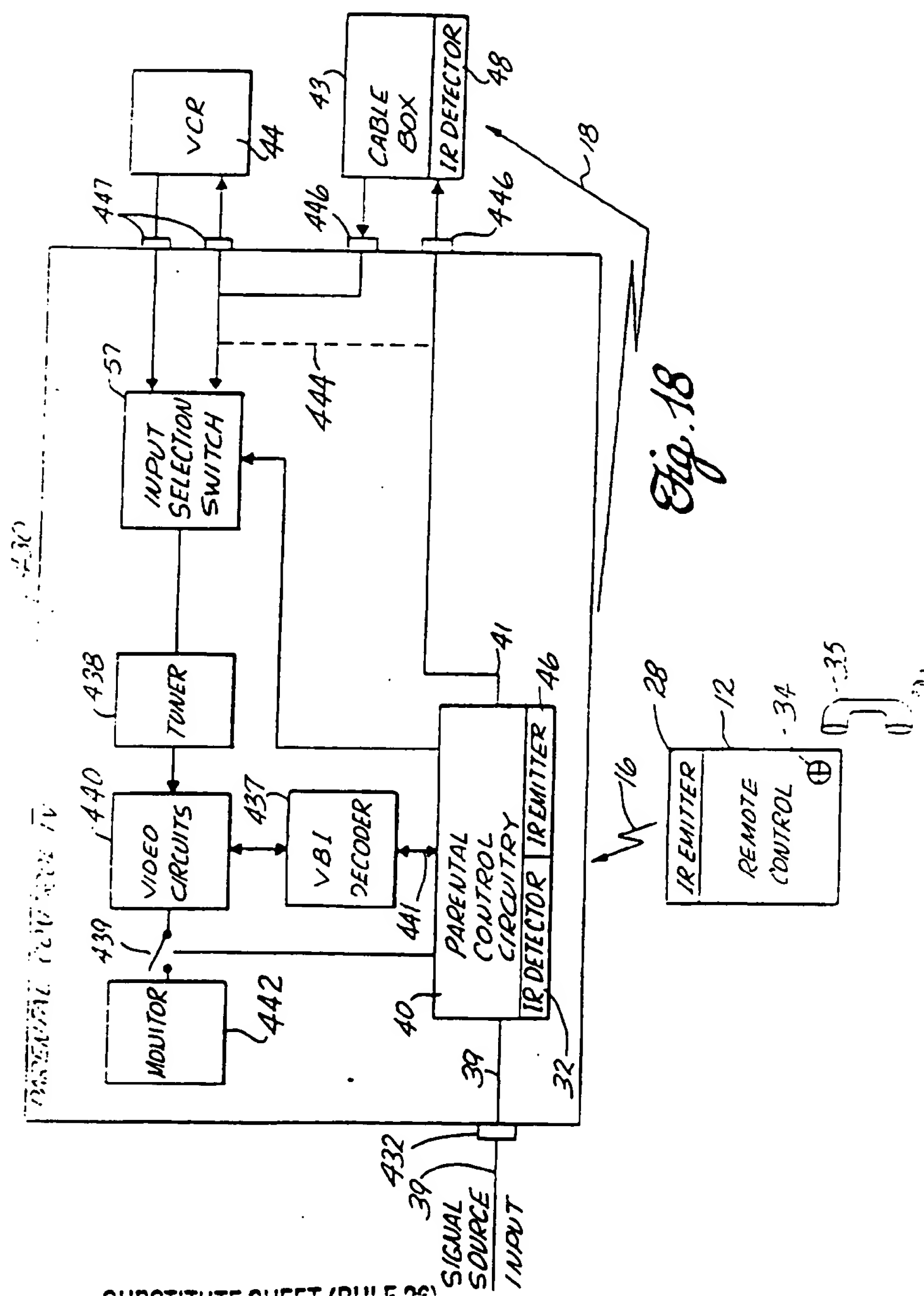




FIG. 19

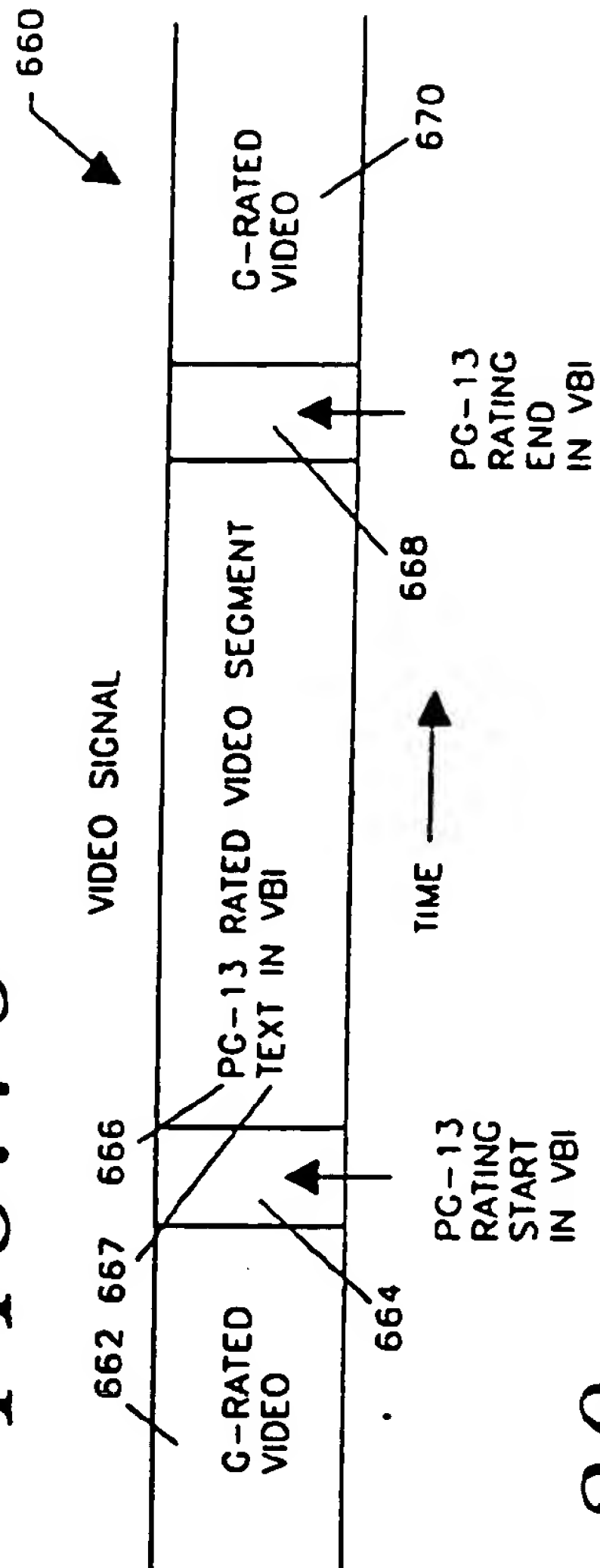
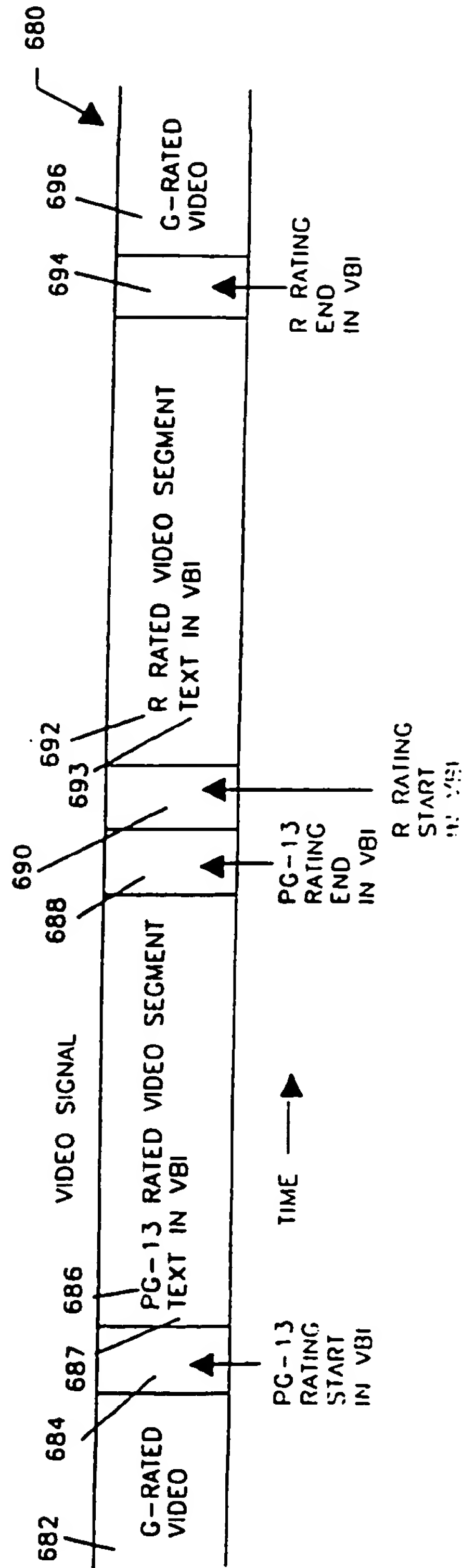


FIG. 20



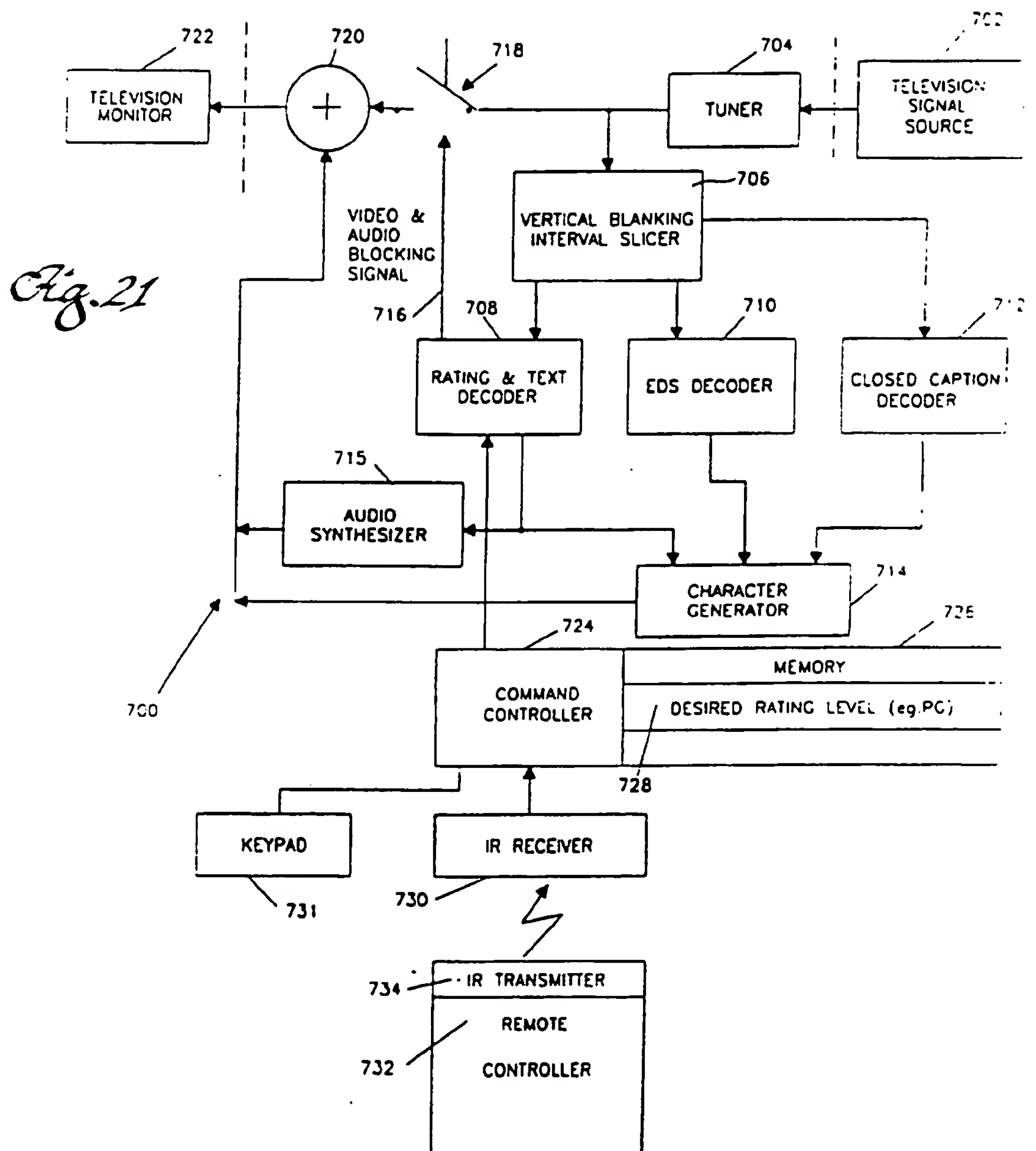


FIG. 22

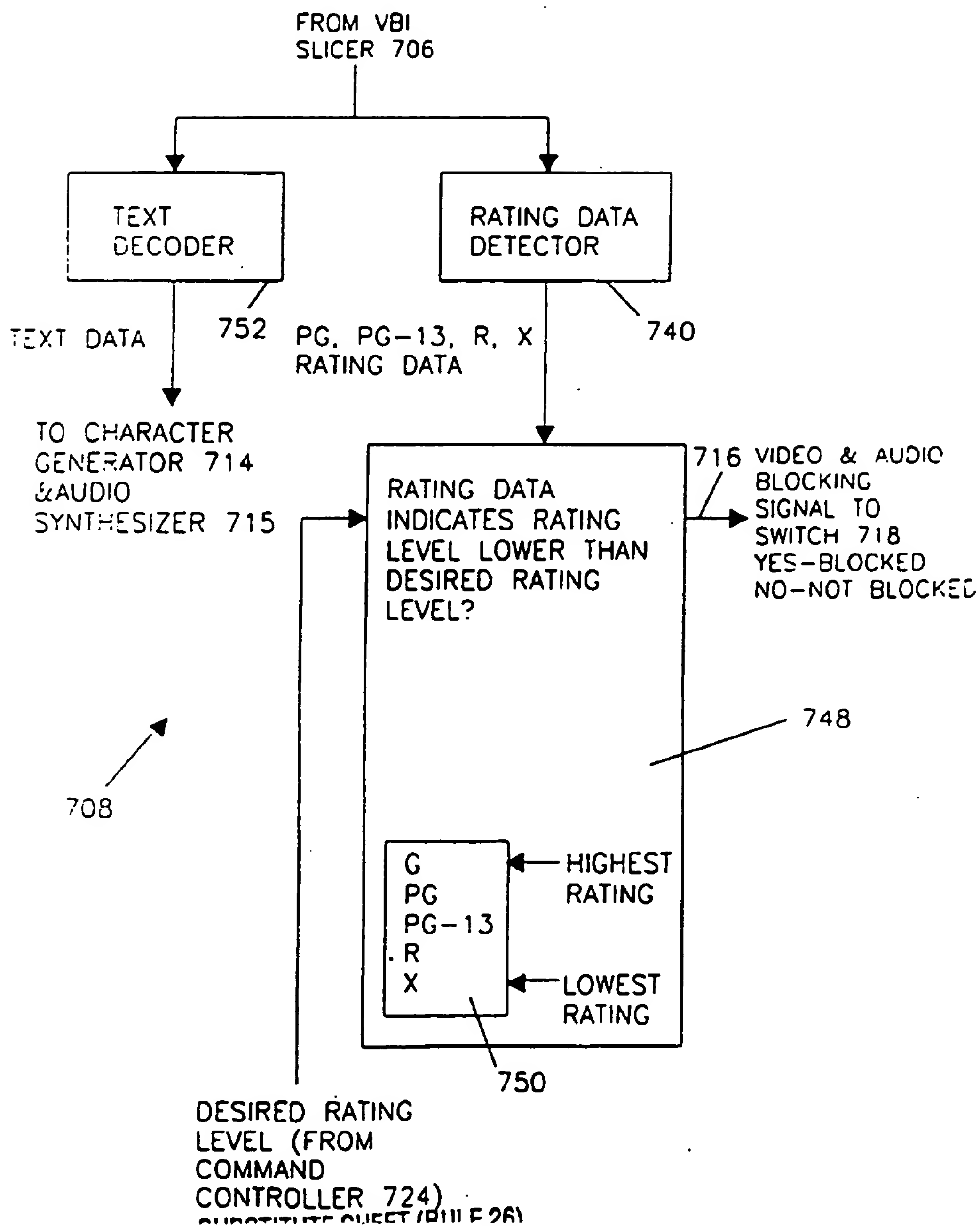


FIG. 23

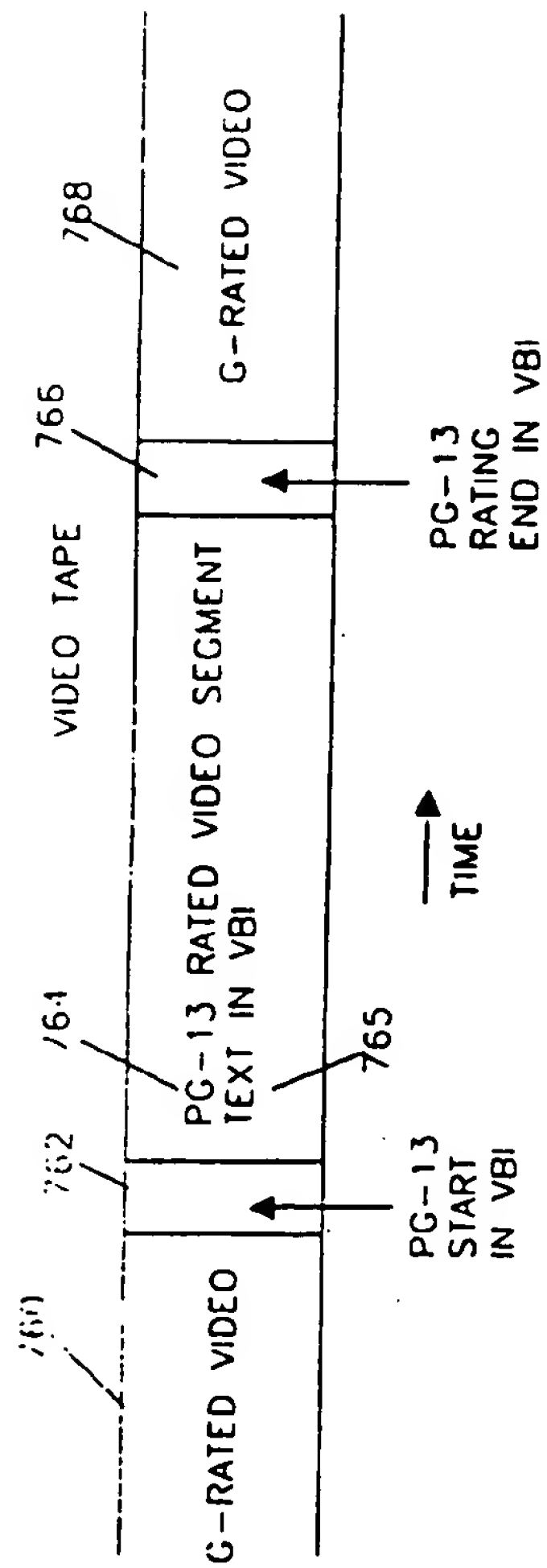
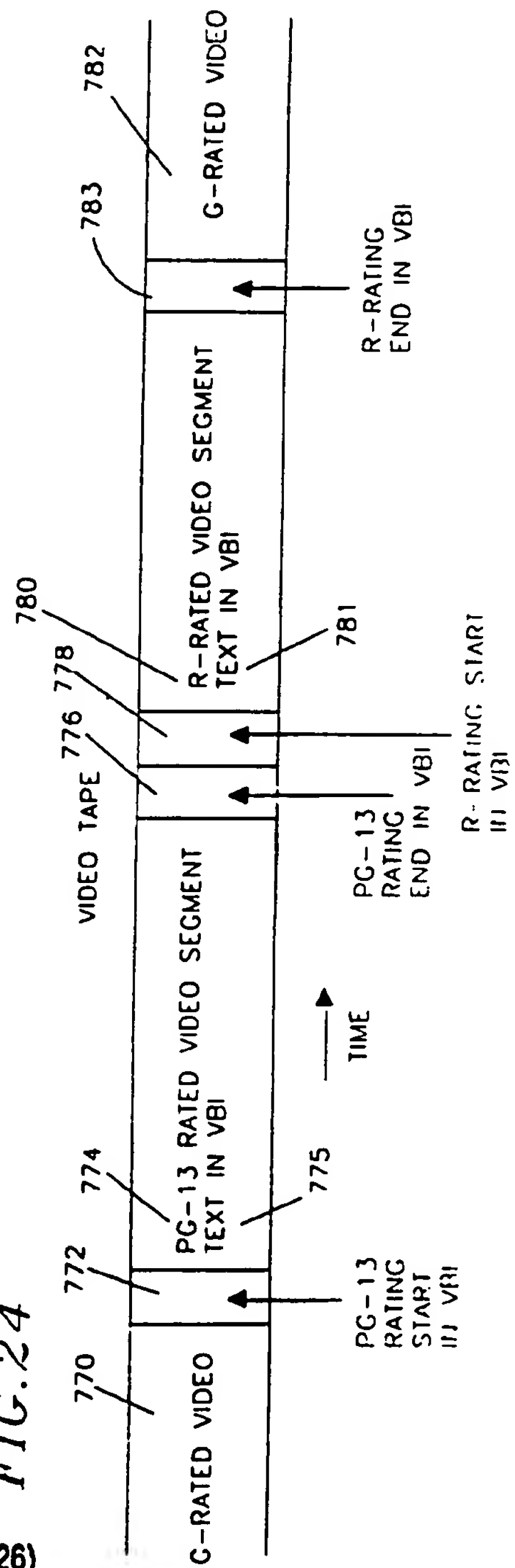


FIG. 24



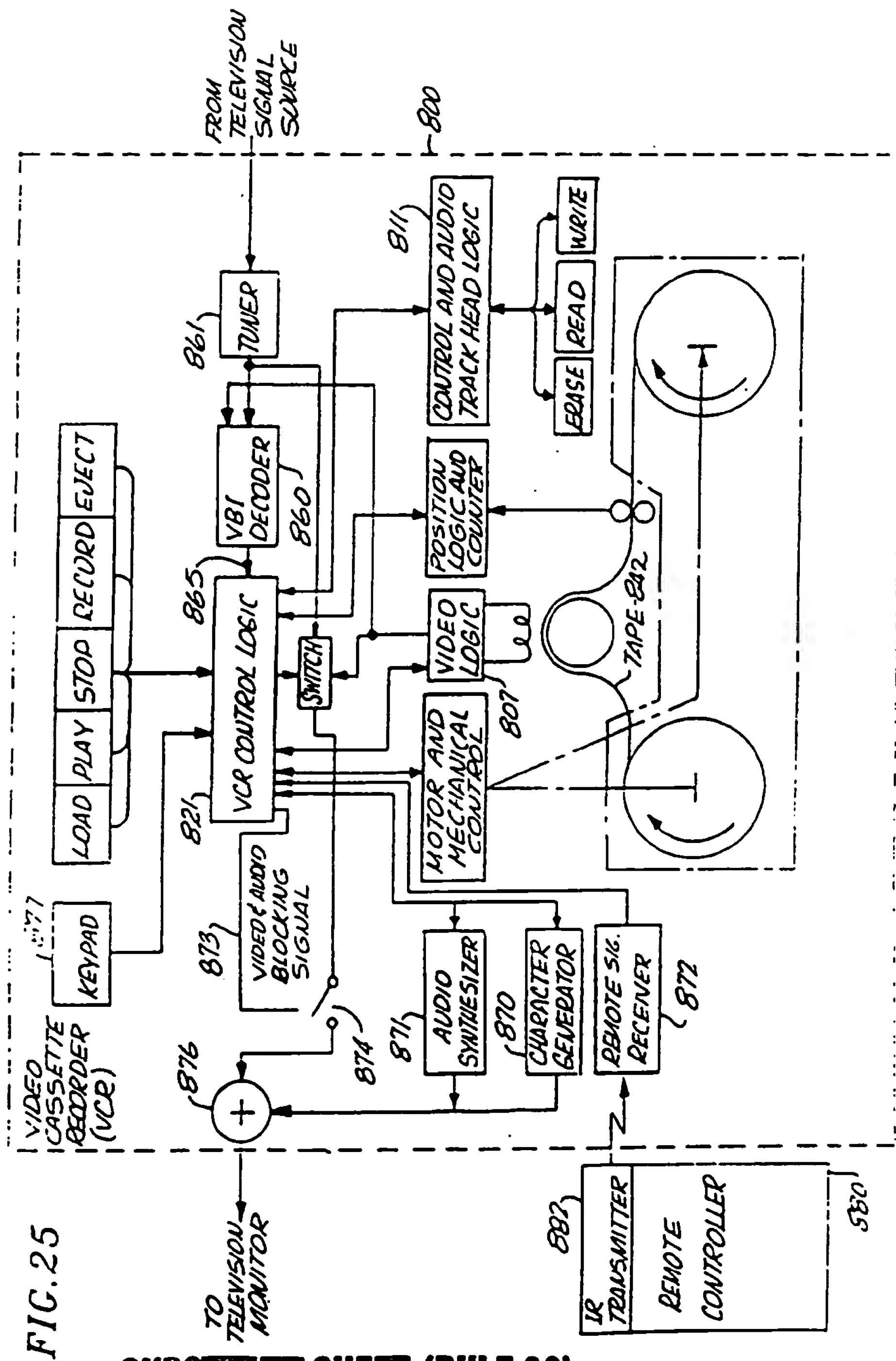


FIG. 26

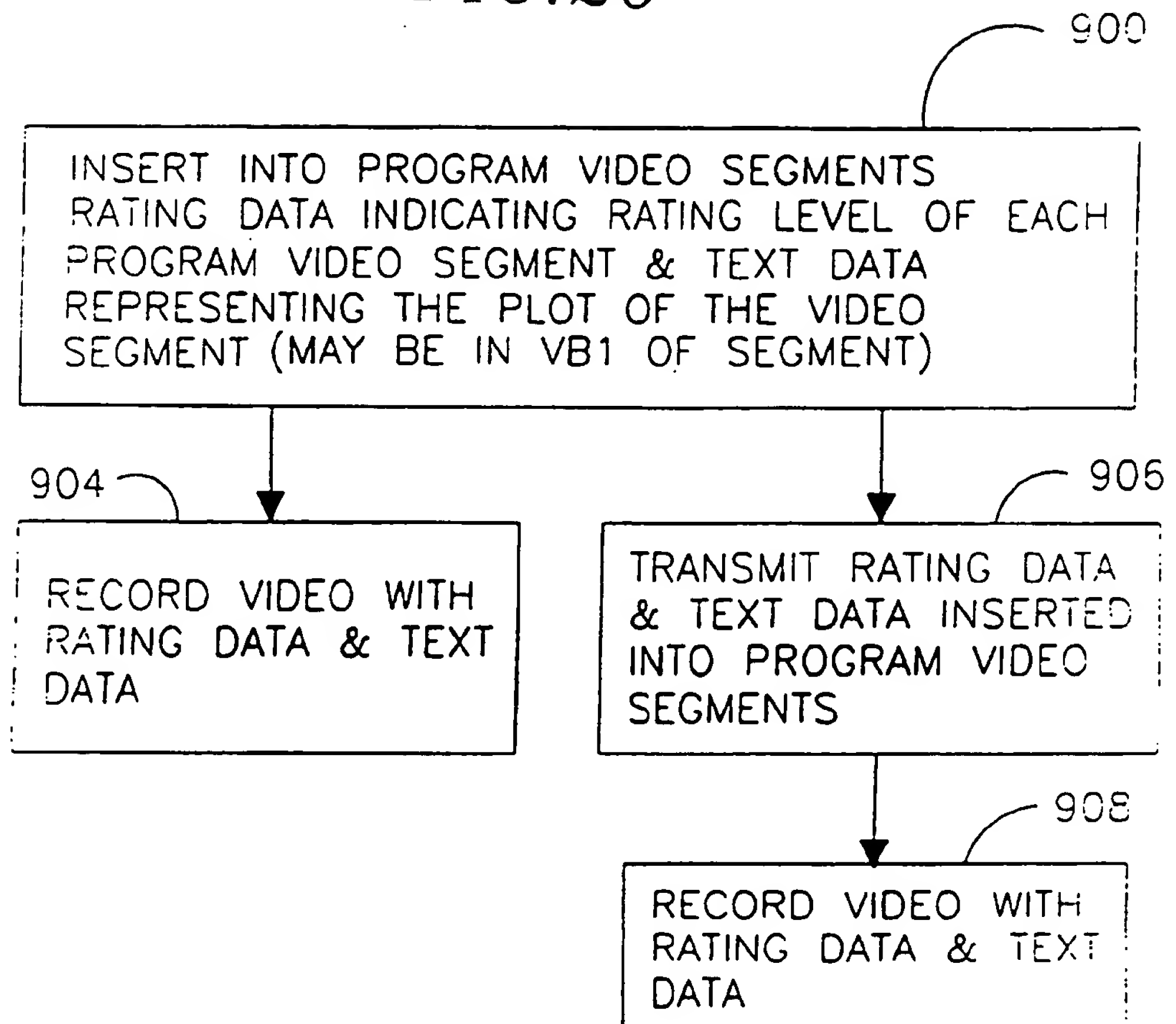
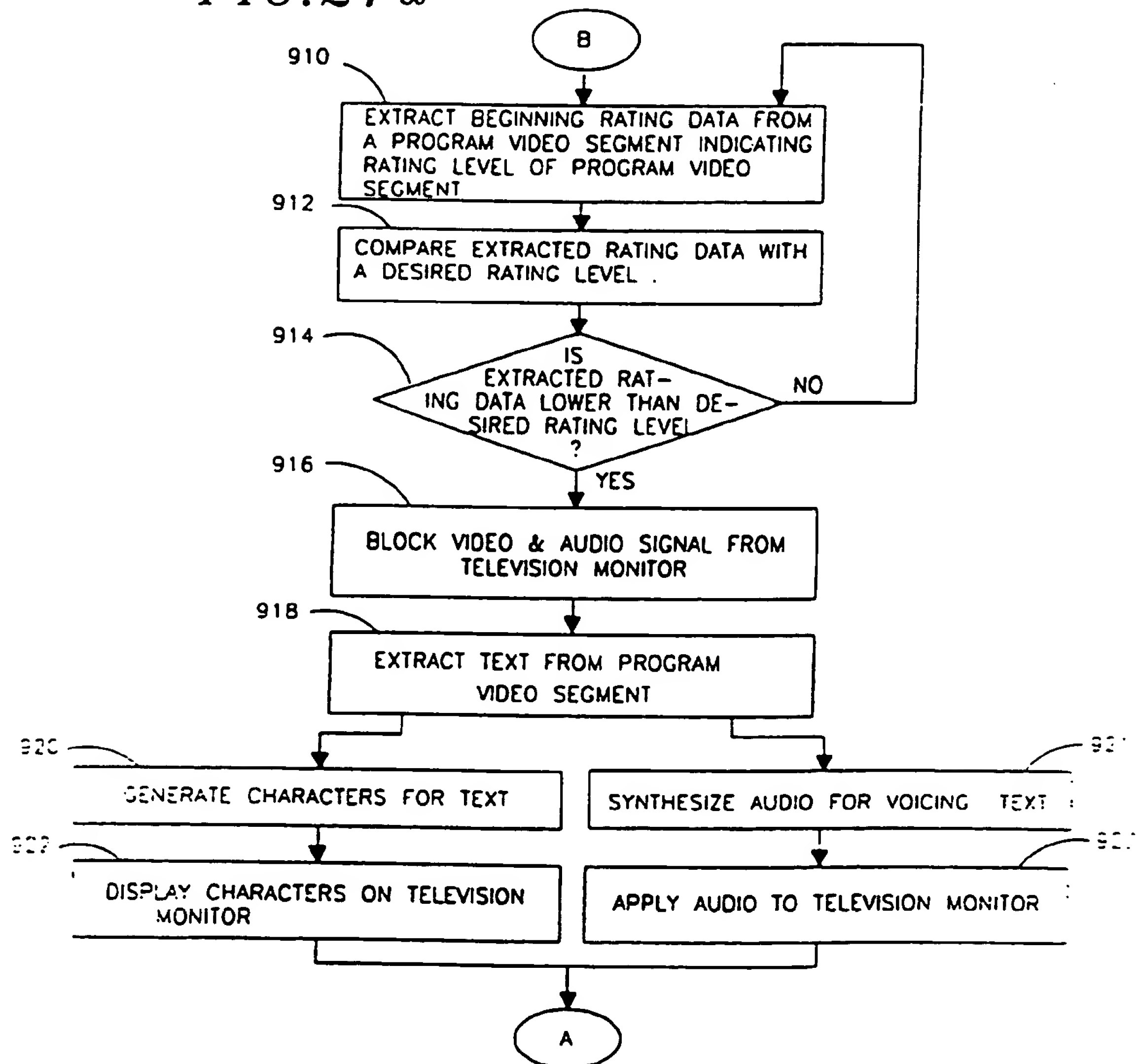
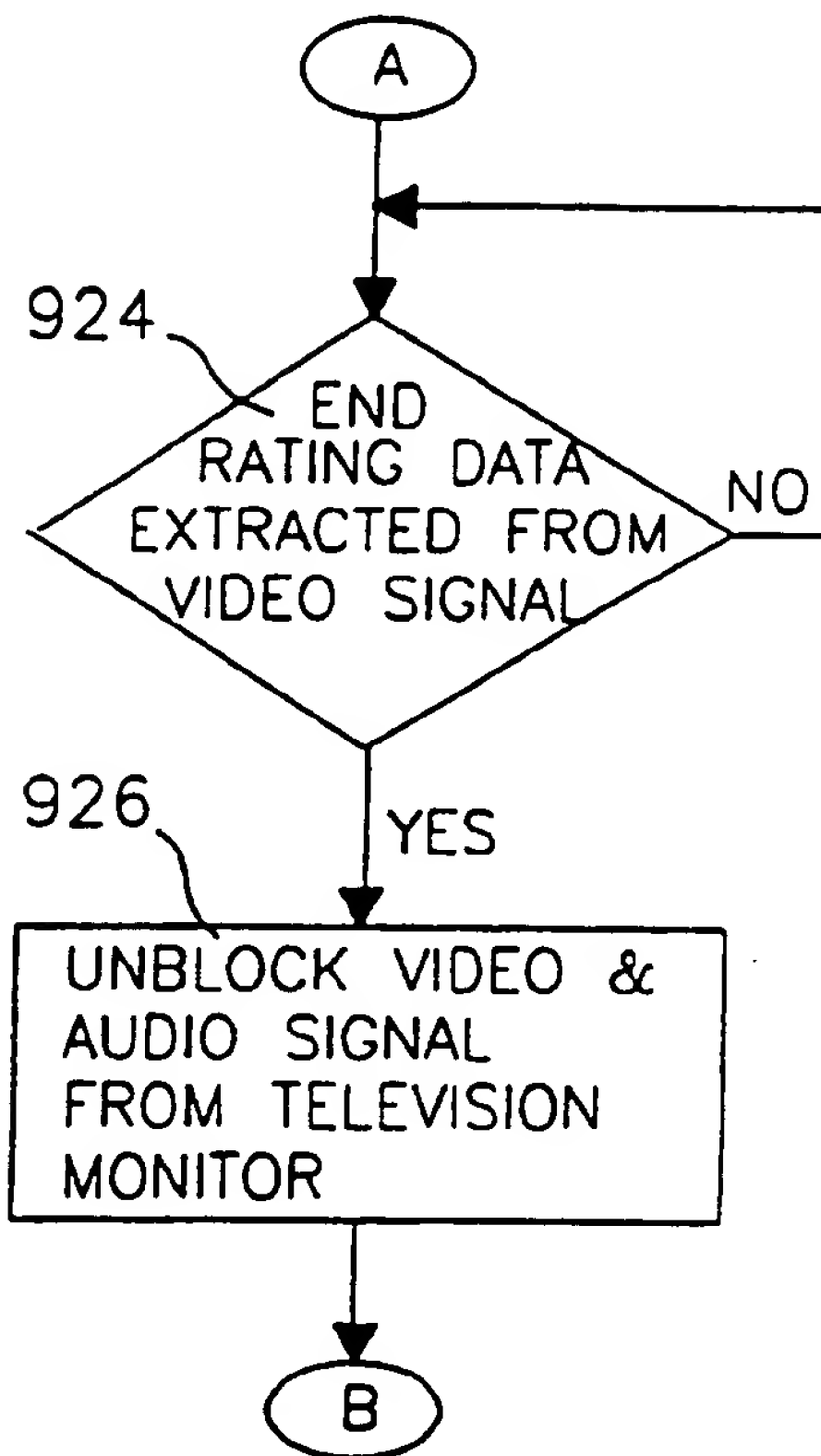
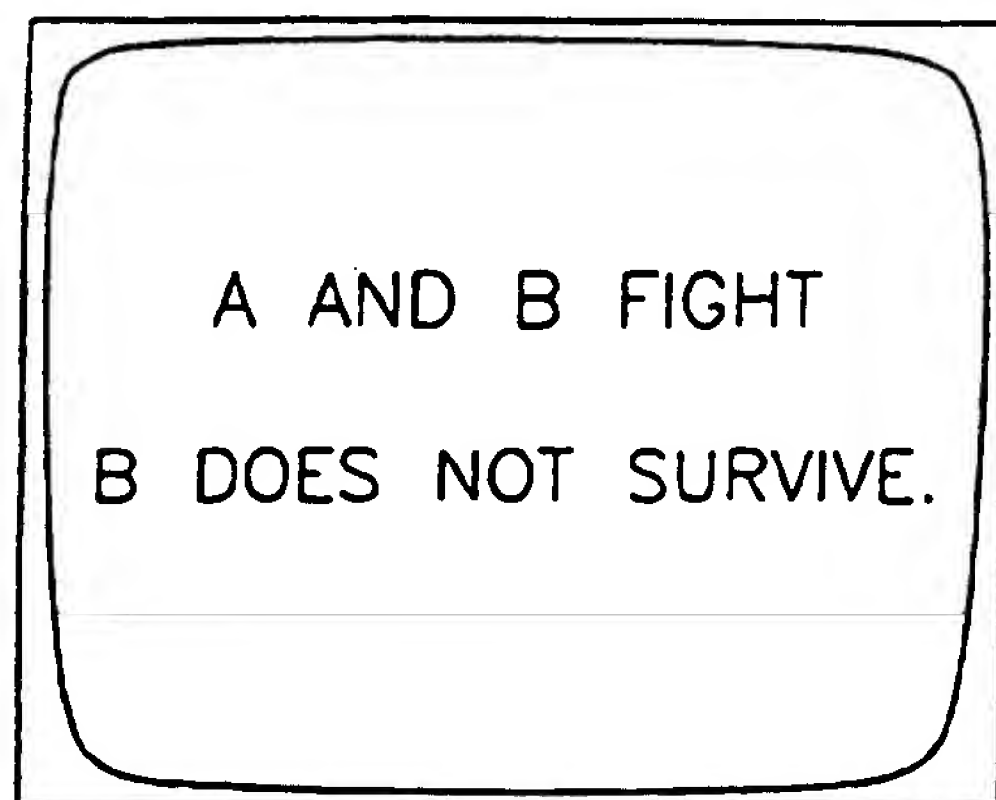




FIG. 27a



*FIG. 27b**FIG. 28*

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US96/02167

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : HO4N 7/00

US CL : 348/1, 460, 473, 476; 455/4.2

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 348/1, 460, 473, 476; 455/4.2

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

NONE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US, A, 4,605,964 (CHARD) 12 August 1986, Fig. 3.	1, 2, 5-7, 10-12, 14, 17-23, 25, 28-35, 37-39, 42-45 and 49-52 ----- 3, 4, 8, 9 13, 15, 16, 24, 26, 27, 35, 36, 40, 41 and 46-48
Y	US, A, 4,888,796 (OLIVO, JR.) 19 December 1989, col.4 line 35 - col. 5 line 24.	3, 4, 8, 9, 13, 15, 16, 24, 27, 35, 36, 40, 41 and 46-48



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be part of particular relevance	X*	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*E* earlier document published on or after the international filing date	Y*	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	G*	document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means		
*P* document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

17 APRIL 1996

Date of mailing of the international search report

30 APR 1996

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